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J. B. HAYNES,

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Miscellanea vere Utilia:

OR

MISCELLANEOUS EXPERIMENTS

AND

OBSERVATIONS

ON

VARIOUS SUBJECTS.

In THREE PARTS.

PART I.

Observations and Experiments upon ALIMENTS, in order to Health and longer Life; wherein divers Kinds of Foods daily in use that are repugnant to Health are mentioned; and TEAS and WINES particularly consider'd: Also other Eatables that are not work'd on by the Digestive Faculty, are pointed out.

With the best Ways of regulating Diet laid down; deliver'd in *Latin* Lectures to Students by the Author, in a plain and easily intelligible Manner; now made *English*.

PART II.

Observations on some Parts of the MATERIA MEDICA, whence will appear the present Mistakes about the same.

Also the Danger the Publick are under from Frauds in Medicines and Drugs.

Likewise a Search into the Nature of COLOURS, whereby to know which are those that destroy the Workmen; with some Thoughts on the deplorable State of other Artificers.

PART III.

Divers useful Discoveries that occurr'd to the Author during many Years Researches in Chymistry.

By BOYLE GODFREY, *Chymist*, M. D

Οὐ πλησμονὴ, ἀ λιμὸς, ἀὸ ἄλλο ἀὸὲν ἀ[illegible]
τῆς Φύσι@ ἢ. HIP

Non fingendum, aut excogitandum, sed inveniendum qui
faciat aut ferat. B.

The SECOND EDITION, with ADDI

1737 LONDON:

THE

PREFACE.

THE proper Ways of feeding our Bodies ſeem as little known to the Generality of Mankind as the Reaſons for the Effects of the Magnet; at leaſt we do not ſee Perſons practiſe them: and indeed there is nothing more difficult than to perſuade Perſons to a Regard of any

Thing ſaid on this Subject, ſo great is the Deſire of gratifying the Itch of the Palate.

Many great Phyſicians have laid down admirable Rules for Regimen, all which ſeem to lie neglected; and indeed I cannot ſay I conceive great Hopes of rouſing up Perſons to an Attention to Matters of this kind by the few Things I ſhall deliver: However, I cannot be eaſy till I have attempted it, and will not yet give up all Hopes of Succeſs.

As to Medicine, there are yet Abundance of Errors in the Chymical Pharmacy; the Ga-

Galenic is well handled by *Quincy*; and if that Gentleman had as well touched the first as the last, his *Dispensatory* had been invaluable; concerning which I have it in Design to write *ex Professo*.

As to the Processes in Part the Third, I believe he that puts them to the Test will find them Facts, or answer, which cannot be said of many Things under the Titles of Secrets, &c. such as are found in *Alexis Pedimontanus*'s Art of Enameling, Colouring, &c. and *Lemery*'s Curiosities, many of which contain nothing but Falsities and Impositions, and

and the laſt of theſe juſt mentioned ſcarce more than barefac'd Lyes: for *Lemery* was not the Author of that Book, was a better Judge of things, but one *Emery*, who the better to impoſe put the *L'* to his Name; from none of which have I borrowed any thing. As Subjects relating to Health are deſirable to be known to all, where any words are uſed that are *Latin* or *Greek* Derivatives, I have put the *Engliſh* thereto; as I have alſo thoſe of Technical Terms.

THE

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OBSER-

OBSERVATIONS
UPON
ALIMENTS,
In Order to
Health and Longer Life, &c.

PART I.

I Am confirmed in the Opinion, that our Bodies are design'd for an hundred Years, and that if we fall short of that Age, it is in great Part our own Faults, we erring either in

the Quantity or Quality of the Aliments we make uſe of; (not that I would be underſtood to mean that we are not ſubject to Diſeaſes, the nice Frame of the Animal Oeconomy certainly renders us obnoxious thereto) and much further than this Age Life cannot run, becauſe Oſſifications will not let us; that is, the Grand Channels of our Blood, the Arteries, as well as the other Parts ſerving to the vital Functions, will turn to Bones, whence the Machine ſtands ſtill; and this happens the ſooner, when the Perſon has been of a laborious Life.

1. I intend at preſent to mention thoſe Vegetable Eatables, that I have found by Experiments and Obſervations not to be wrought on by the Stomach, and which are ejected in a crude undigeſted State, being uſeleſs to our Bodies; and others that are very hard of Digeſtion.

2. Thoſe of the Animal Kind.

3. Thoſe Eatables that are noxious or improper for our Bodies.

4. I would lay down ſome general Rules for Diet, for the Preſervation of Health.

Firſt, Of thoſe Eatables that grow in the Earth, call'd

Vegetables.

MOST raw Herbs, as Sallets, *&c.* are of a Texture, or Make, that renders them ſcarce digeſtible; for the Stomach works very little upon them, they paſſing moſtly in a crude State: But ſome Perſons being told of this, make Anſwer, they are of a cooling Nature, they forgetting that many of them are juſt of a reverſe kind; For Parſly, Sage, Mint, Creſſes, Chervil, Raddiſhes, Horſe-raddiſhes, and Onions, are of a very hot Nature; the three

firſt abounding with an Æthereal Chymical Oyl; the others with a volatile active Salt, which in Plethoric Habits, or a too great Fulneſs of Blood, are very pernicious.

Muſhrooms.

THESE are wholly indigeſtible, and a Perſon may as well eat *Buff*, or *Cork*; beſides, ſome of them are of a poiſonous Nature, as myſelf have ſeen in ſome People.

Potatoes.

THESE when roaſted are very hard of Digeſtion, and when boil'd are one of the ſtrongeſt of all Vegetables; however, if well boil'd, may ſerve for Food to People who uſe Exerciſe.

TRUFFLES are not digeſted.

Pickled

Pickled Cucumers, French Beans and other Pickles,

ARE very little work'd on by the Stomach, beſides the Acid or Sourneſs they carry into the Habit: I have cauſed a Man to take an Emetic four Hours after eating them, and when they were thrown up, I found them as the Teeth left them.

Raddiſhes.

THESE are of a very crude Nature, and not digeſted; beſides their Heat, which makes them noxious; for they greatly heat the Blood.

Small Nuts, Wallnuts, and (above all) Cheſnuts.

THESE are very improper to be eaten, being very crude, and

and which occaſion a Pain in the Stomach, &c.

Unripe Fruits in general.

THESE are likewiſe extreamly crude, and indigeſtible, and introduce Miſchiefs by their Acrimony, or Sourneſs; they bring on the Diarrhœa's and Dyſenteries (Flux and Bloody Flux) heard of at the Seaſon when Fruits are in this State, which they effect by the eſſential Salt inherent to the Juice ſtimulating the Inteſtines: This Acrimony appears by the Blackneſs on a Knife when unripe Fruits are cut, which ſhews that Part of the Steel is diſſolv'd. I knew a Youth who dy'd by eating what they call Gooſeberry-Fool; and others flung into violent Cholics. Moſt Fruits that are ripe may be eaten very ſafely; The moſt innocent of all are Strawberries; but Currants ſuit few Perſons, becauſe of

of their Sourneſs; for Acids agree with few People; the Phyſician knows beſt when to order them: This Sourneſs People think to take off by Sugar, which is a grand Error; for Sugar is an Acid *ex Prædominio* itſelf, being made up chiefly of ſuch Parts, and committed to Diſtillation gives a Spirit not unlike Vinegar; it only hides the Sourneſs from the Taſte, and deceives the Palate.

The Fruits that muſt be eaten with Care above all others, are theſe, *viz. Grapes*, *Mulberries*, *Figs*, and *Melons*; for theſe uſed too freely, bring on frequently a Looſeneſs, like Manna; for the Sweetneſs in them is a Kind of Manna, and differing very little from it: *Melons* are of a cold Nature, which often ſtop natural Perſpiration, which is, otherwiſe ſpeaking, a Surfeit. This alſo happens from Cucumers to ſome Habits,

Habits, in which they alſo bring on a Looſeneſs.

Cherries,

ARE a good Fruit; and a learned Profeſſor of *Holland* ſaid in one of his Colleges while I was at *Leyden*, that their Juice is very good againſt a Schirrus of the Liver; but it is a great Error to ſwallow their Stones, and ſet ſo fine a Part as the Stomach to grind on ſuch hard, and often pointed Things. Theſe may be abuſed; for a Gentleman, at preſent a Surgeon to one of the Regiments of Guards, told me he knew a Man who did eat five Pounds, by which he was made very ill, whom he relieved by large Doſes of Spirit of Harts-horn; which Spirit containing a volatile Alcaline Salt, I ſuppoſe, engag'd the ſtimulating acid Juice of the Fruit. The late ingenious Surgeon of *Chelſea* Hoſpi-

Hoſpital acquainted me with an odd Accident that happen'd from Cherries, *viz.* that Part of the Skin of one ſtuck ſo cloſe to the Coats of the Stomach of a Perſon who eat them, that the Man almoſt ſtrain'd to Death in vomiting, before it was clear'd from the Part it adher'd to.

The next in Order are Eatables of the Animal Kind; as Fleſh, Fowl, and Fiſh.

Eggs boil'd hard.

THE Whites of theſe are wholly indigeſtible, and ſome of the worſt Things we ſuffer to enter our Stomachs; they occaſion Cholics: Let a Man eat the White of one hard Egg every Day, it's more than probable he ſhall not live a Year. The Aſſertion of ſome, that Black Raddiſhes reſolve hard Eggs, is a Falſity. Eggs when ſoft boil'd

are one of the ſtrongeſt Foods we uſe: People vaſtly err, who imagine them a light Meal for a Perſon not well: which, however, may be eaten at Dinner if ſoft boil'd: The worſt Way we uſe them, is mixing them with Ale, or other ſtrong Liquors; I have known that done, when the Egg that was put into the Ale ran together again, which making the Stomach uneaſy, an Emetic was exhibited, and the Perſon near Death's Door in getting rid of it.

Cheeſe toaſted,

BEcomes like Leather, and indigeſtible; it were to be wiſh'd Cheeſe were uſed more ſparingly; for the Saying, *Caſeus eſt bonus, quem dat Manus avara*, is true. The Cheſhire is corroſive, for it will excoriate the Mouth, *&c.*

The TAIL of a LOBSTER is extremely hard of Digeſtion.

Oyſters

Oyſters

DONE in the Shell on the Fire are render'd indigeſtible, and a Man may as well eat *Buff* as them; otherwiſe dreſs'd, they are very good.

Udder of the Cow,

IS hard of Digeſtion; which Part is very often unſound, it being ſubject to Ailments like the Breaſts of Women.

Gizzards are untouch'd by the Stomach.

Kidneys, and the *Heart* (which is a Muſcle) are very hard of Digeſtion. So are the *Lungs*, and the leſſer End of a dry'd Tongue hardly work'd on; likewiſe tough Meats.

Speaking here of the digeſtive Faculty, it may not be amiſs to take Notice of that of voracious Creatures, as Dogs, Wolves, Tygers, Panthers, Bears, Monkeys, Baboons, and Lions, the Stomachs of none of which alter hard Bones, which are found in the ſame State in the *Stercus* or Dung, as the Teeth left them in. How fabulous then muſt be the Aſſertion of the Oſtrich's digeſting Iron, notwithſtanding the Power of his Gizzard to grind. I making the Experiment of the Laurel-Water on the Life of Animals, and killing a Dog thereby in the Preſence of ſome Phyſicians and Virtuoſo's, one of the Phyſicians bade a Surgeon preſent cut open the Creature, when we found a Cartilage or Griſtle in the Ventricle or Stomach, which the Owner of the Dog remember'd to have been given him ſome Hours before, which was unalter'd, or unwork'd

work'd on, which is much leſs hard than a Bone.

Opening a Number of Vipers, I found in the Inteſtines of two of them a Mouſe, which Mice were paſſing unalter'd, and which could not be digeſted becauſe of their Skin. It is ſtrange that any Perſon acquainted with the Animal Oeconomy ſhould expect the harder Subſtances ſhould be digeſted by the Stomach, (which is not a Millſtone) when we know that Digeſtion is little more than Trituration, Maceration, and Expanſion, of the Aliments, by warm, aqueous, or watery Liquors; for to imagine a Fermentation is a Dream; for no Vegetable Fermentation, nor Animal Putrefaction, can be effected in four or five Hours, which is the Time the Aliments are allowed to ſtay in the Stomach to make a Chyle, before they mount the *Pylorus*, or lower Orifice of the Stomach in order to enter the Inteſtines,

teſtines, or Guts, to be ejected; of which Thoughts ſpeaking to a Gentleman, he objected that I did not conſider the further Work in the Inteſtines; and that as the Aliments often remain in them forty Hours, or longer, they might rot or putrefy there: To which I anſwer, I believe the Inteſtines, by their Periſtaltic Motion, may ſqueeze and aſſiſt in getting the Chyle ready for the Lacteals; but if the Vegetable Aliments rot, or the Animal ones putrefy, I aſſure myſelf that what Chyle they ſhould give for the Uſe of the Blood, would be very improper for it; for it would be an *aliud quid*, a *tertium quid*, *(Corruptio unius eſt Generatio alterius)* and may be noxious, or poiſonous, as we know dead Animals in the State of Putrefaction are. I cannot ſuppoſe that a Vegetable ferments in the Body, as it does in the Diſtiller's Veſſel, when he is about the Work of

of making an ardent Spirit; for I ſhould think that would be hinder'd both by the ſpirituous Liquors we take in, and the Marine Salt: for I have obſerv'd, that if a little vinous Spirit be flung into the fermenting Matter, or ſome Salt, the Operator works in vain. It is a Queſtion likewiſe, whether the volatile Animal Salt in us would not alſo obſtruct it, which it may eaſily meet with, our Secretions abounding therewith, eſpecially the *Saliva* we inceſſantly ſwallow; which Salt I have by a certain Proceſs ſublimed from the Shirts of ſweating Men by a Water-heat, which cannot be done from the other Parts of our Bodies in a natural State without an arid Heat. It is poſſible Aliments may ſtay a longer Time in the Stomach; for an Example has been known, that a Man having eaten Grapes, and having an Ague, an Emetic was exhibited for the beginning

ginning the Cure twenty-four Hours afterwards, when the Grapes were caſt up no ways corrupted nor putrefy'd. The ſame has been obſerv'd of a Perſon that had eaten Cherries.

I would now mention a few Things that we ought to be cautious in the Uſe of, *viz.*

Salt.

IT is pity we are, as it were, neceſſitated to uſe Salt; for this Ingredient is but a bad Gueſt in the Animal Oeconomy; and thoſe at Sea wofully experience it; for they are full of the Gravel: We never take any into our Bodies without its leaving a Part behind; for it is partly indiſſoluble to our Fluids, or the Humane *Latex*, which contains a good deal of Subſtance, or Matter itſelf, and which on an Analyſis or Chymical Examination gives the ſame Principles or Subſtances as other Animal

mal Subſtances do, and thence is leſs fit to diſſolve Salt, which chiefly remains in the Kidneys: This Inaptitude of the Salt to be diſſolv'd proceeds from the cloſe Combination of its Acid with its own Earth, which is not ſo in Sugar, which is very innocent. There are indeed ſome Gentlemen who think Salt neceſſary to ſtimulate the Inteſtines, for the Protruſion or Expulſion of the Excrements; but I believe Nature has provided for that Work without it; which is evident from the Obſervation on the Soldier wounded in the Gall-Bladder. *Philoſoph. Tranſact.* N°. 414.

Vinegar.

THIS in the Hand of a Phyſician may be of Service, but is what Perſons ought not to make too free with; for Acids or Sours diſagree with moſt People; they introduce

troduce a Lentor and Coagulum into the Blood, and ſpoil its free Circulation; they occaſion Cholics, by ſtimulating the Inteſtines or Guts, the Seat of that Illneſs.

Oil.

THIS alſo is of Uſe in the Phyſician's Hand, but not to be play'd with; it palls the Stomach, and takes away the natural Appetite.

Muſtard.

THIS is of Uſe in Medicine, but very improper to be made free with in Victuals; for it contains a volatile pungent Salt, which is Fire to our Nature, heats the Blood, and increaſes its Motion to a great Degree: And of this Kind is Horſe-raddiſh, very improper for moſt Habits, but of Uſe in Medicine.

Spices.

Spices.

THESE have their Uſe in Medicine, but are bad Ingredients to make free withal; they contain a fiery active æthereal Oil, which greatly heats the Blood, and which does much Miſchief in ſanguine or Plethoric Conſtitutions, or where a Perſon is full of Blood: This Oil is much the ſame within us as ſtrong intoxicating Liquors.

Onions,

AS ſaid before, are very heating, but well boil'd, as is the Cuſtom with Rabbits, their active volatile Salt is driven away, and they become mild and innocent.

Cream.

THIS is in ſuch a concentred or contracted State, as to be

very improper to uſe freely; it is one of the too-good Foods; Nature likes plain and ſimple Things: It may poſſibly be of Uſe to a conſumptive Perſon, who needs the Nutriment that would be too much for another Man.

Gravy, as 'tis call'd.

A Little of this juſt to touch the Meat in, by Way of Sauce, can do no Harm, eſpecially to thoſe who drink at Meals ſmall diluting Liquors; but it is very improper to be ſupp'd freely, as ſome do, or to be uſed in Broth, &c. for it will ſubject the Uſers to Fevers, and is bad for thoſe of a Scorbutick Habit; it is concentred Blood, the more watery or ſerous Part being exhal'd by the Fire, the Remainder is driven into a leſs Compaſs, which is too much for Nature.

Seville

Seville Oranges.

IF we go by the Guide of Taſte only, theſe ſeem agreeable; but the Queſtion is not what we like, but what likes us? They are of Uſe in the Phyſician's Hand, but noxious to uſe frequently: The ſelf-ſame may be ſaid of Lemons, or worſe.

Olives Pickled.

THESE are extreamly improper for Uſe, they being full of an Oil that palls the Stomach, and beſides contain a pungent Salt, which occaſions the Senſation call'd the Heart-burn; that is, an Inflammation of the Mouth of the Stomach.

Olives Pickled Dry'd

Oliva est bonus; quem dat

Dry'd Currants and Raiſins.

THESE occaſion Cholics, and purge People, eſpecially the firſt; for the Saccharine or Sugar-like Taſte proceeds from a Salt that is in them not unlike Manna.

There are ſome of the Kinds of Fiſh that diſagree with ſome Perſons, which being commonly known, it's needleſs to name them: If Oyſters ever purge (as they will ſome) it is not from themſelves, but the Sea-Salt in the Liquor that is with them; they are admirable Food. *Sanctorius*, indeed, ſays, Oyſters hinder Perſpiration; they are bad in a Plethora, or where the Blood too much abounds; they are apt to run into Corruption, and Fermentation: but though I admire many of his Statical Experiments, I ſhall venture on theſe Fiſh either raw or gently ſtew'd.

ſtew'd. I ſpeak of purging, becauſe it is a harder Tryal upon the Animal Oeconomy than Perſons imagine, and a Work not to be done but by the Phyſician's Order.

And now of ſome other Things that Luxury has led Men into, *viz.*

Tobacco.

I Muſt own I wonder more at the Uſe of this than all other Things; for Nature ſtartles at firſt at it; it occaſions a violent Sickneſs and Vomiting; it contains a fœtid Oil that is next to poiſonous: I have known very ill Effects from chewing it; and am ſure a Man is better without the Uſe of it any Way. *Ramazzini* ſays it occaſions the Piles, renders the Lungs dry, and by robbing us of too much Saliva brings on Conſumptions.

And next the favourite Luxury,

Teas.

Teas.

I Am for conſidering Teas, likewiſe Coffee and Chocolate, in a natural State, and without analyſing or taking them to pieces; for upon doing that, we find Principles or Subſtances that do not affect us before they are ſeparated by Art: for Example upon a chymical Examination of Tea, Coffee, or Chocolate, we obtain a ſharp Vinegar-like Spirit, *&c.* which in a natural State is latent or unperceiv'd, and, as ſaid above, don't affect us as ſuch. Thus Bread, doubtleſs, is good for all; but if we take it to pieces by a chymical Proceſs, we get an hot Oil, and a ſharp acid Spirit, neither of which, perhaps, would agree with us; therefore, I ſay, I ſhall not trouble my Reader with the Principles or latent component Parts of them.

The

The Green and Bohea, I agree with others to be one Species of Herbs, the latter of which is now adulterated, and chiefly by a Solution of Japan-Earth, and ſometimes by a worſe Way: This Herb has in it a very pungent and even corroſive eſſential Salt; but as to a fixt lixivial one, as a late Writer aſſerts, it is a Miſtake; for there is no fixt Salt præ-exiſtent to Calcination, ſuch Salts are made during Calcination, by the Acid of the Vegetable preying on its own *Terra*, or Earth, and thereby forming a Salt; and which Salt being kept in the Glaſs-houſe Fire, the Acid is driven off, and you have the *Terra:* We may alſo take away this acid Part by a certain Proceſs with Sulphur. If ſtrong Tea be held in the Mouth, a diligent Obſerver will perceive an Uneaſineſs; for it begins to ſtimulate the Membrane or Skin of the Mouth, *&c.*

Strong Tea will corrode or gnaw Fleſh; it will alſo corrode Iron: *Kæmpher*, in his Appendix to the Hiſtory of *Japan*, ſays that it has a ſtrong Narcotic Quality, (that is, of the Nature of Opium) and that it is unwholeſome till kept a Year.

We know Examples of People who were great Drinkers of ſtrong Tea, who died thereby, and who being opened, their Stomachs were found ulcerated; I am confirm'd by Obſervations and Experiments, that a too free Uſe of Tea made ſtrong is very pernicious; its eſſential Salt ſpoils the Texture of the nervous Fluid, call'd the Animal Spirits: it coagulates the Blood, and impedes its free Circulation: It is an Error to think it raiſes our Spirits; it is only the Effects of the hot Water; hot Water and Straw will do the ſame, which holds but a little while, and then the Drinker almoſt trembles. Our own Country

produces

produces about eighteen hundred *Simples*, out of which we may pick very pretty Teas, without failing to *Turky*, the *Eaſt* and the *Weſt Indies* for a Breakfaſt, as we do for this Herb, Coffee, and Chocolate, for the firſt of which we ſend Coin: Thoſe who are reſolv'd to uſe it, let them make it ſmall, and add thereto ſome Milk, which by its butyrous Part takes off, in ſome meaſure, its ſting; but they will do much better to uſe inſtead thereof an Infuſion of Ground-Ivy, Baum, Sage, or Coltsfoot. I am of Opinion that moſt of the modern nervous Illneſſes, and Lowneſs of Spirits ariſe from the Abuſe of Tea, and the Uſe of thoſe deadly Doſes, Drams; and in which I have the concurring Sentiments of ſeveral of our learned Phyſicians.

Coffee.

A Diſh of this not made ſtrong can do no great Harm; but

I am ſatisfy'd, that ſtrong Coffee muſt be noxious; for its innate fœtid Oil is rarify'd and puſh'd towards the ſurface by the Act of roaſting, whereby it becomes like an *Oleum Philoſophorum* (as 'tis call'd) or Oil of Bricks, very pungent and active, which renders the Decoction of Coffee almoſt capable of convulſing the Stomach: This hot Oil muſt ſurely be bad for Perſons of a Plethoric Habit, or that abound with Blood.

Chocolate.

THIS is a very ſtrong Ingredient, and very hard of Digeſtion; its Oil muſt in Time pall the Appetite: It ſeems indeed to give an Appetite, but it is not a true and natural one, but occaſion'd by its ſtimulating as it goes over the *Pylorus*, or lower Orifice of the Stomach:

Stomach: It is certainly too ſtrong for us if made thick.

The Things I have yet to mention that ought to be cautiouſly uſed or avoided, are ſpirituous or ſtrong Liquors, touching which Perſons err more than in all Things elſe in the World; I ſay, I know of nothing that the Generality are under ſo great a Miſtake about as ſtrong Liquors; and there is no convincing them of the Rock that they are about to ſplit upon: They are accounted our Comforts, our Support and Strength; whereas they are our Bane and Deſtruction, and introduce every Thing into the Animal Oeconomy deſtructive of its Functions. There is a latent Acid in ardent or burning Spirits, beſides the fiery Part, which is the merry-making or intoxicating Quality in all ſtrong Liquors, and which is a bitter Enemy to the Springs of Life: This

This Acid is evident from the following Experiments, *viz.* Put an Ounce of Spirit of Wine into a Quart of pure Water, ſhake it, ſet it by for a few Days, you have a ſour Liquor or Vinegar.

2*dly*, Let a Piece of Lead be laid in Spirit of Wine, which after ſome Time will have its Surface eaten or corroded, and a Ceruſs or white Lead will be form'd: Which Power of corroding comes from the acid Salt, one of the component Parts of the ſaid Spirit. Strong Liquors of all Kinds hinder Digeſtion, they being juſt of a reverſe Nature to what is neceſſary to it: They introduce a Lentor and Coagulum into the Blood, and impede or ſpoil its due Circulation: They ſubject the Drinkers to Cholics; and beget Polypuſſes: Many are the Miſchiefs that might be enumerated, that are brought on by the Uſe of vinous Liquors; inſomuch that I am ſorry

Nature

Nature has ſuffer'd ſuch a Change to be brought about in Vegetables, as their Phlogiſtic Part to turn to a vinous Spirit by Fermentation.

Touching the different Kinds in Uſe we would likewiſe ſay ſomewhat, *viz.*

Thoſe held higheſt in Eſteem are the *French* Wines, which in Truth is the Curſe of that fine Country; for all of them (except that call'd Muſcat, or Muſcadine) and eſpecially the *Burgundy*, are their Bane, and the Bane of many here; for they abound with a cruel Tartar indiſſoluble to our Fluids, from their Acid being cloſely combin'd with their own *Terra* or Earth, which Tartar ſubjects the People of the Country to the Gout, Vertigo's, all the Kinds of Hæmorrhages or Effuſions of Blood, the Gravel and Stone: Of the Nature of thoſe Wines alſo are the *Rheniſh* and *Galicia*, and to be

be avoided alike. If a Man is firmly reſolv'd to go on in the Uſe of Wine, let him uſe *Red Port*; of many Evils he then chuſes the leaſt: but as it is near as ſtrong again as ſome of the *French*, leſs muſt be drank; and I adviſe him to drink Water with it, before it, or after it; for much leſs Miſchief will ariſe this Way, than by letting it be in the Stomach alone: Oil of Vitriol is a good Medicine diluted by Water; but Death alone: Spirit of Harts-horn is excellent in Water; but likewiſe Death alone, which I have known happen; as I have alſo from that mild and uſeful Medicine *Sal Volatile Oleoſum*. Sack is one of the ſtrongeſt of all Wines, thirty two Ounces of which contain upwards of three Ounces of an ardent or inflammable Spirit: *Rheniſh* and ſome of the *French* are the weakeſt in Spirit. I wiſh there were no Adulterations in Wine here!

here! Some time ſince a Man was beheaded in *Switzerland* for uſing Arſenic and White Lead to clarify Wines.

Malt Liquors.

FRESH Small Beer is a good Drink for moſt People; but the Strong Beers and Ales are very deſtructive to Health; nothing occaſioning a Dropſy ſooner: The moſt innocent of all ſtrong Liquors is common Ale of Alehouſes.

Punch.

THIS is the worſt Compoſition or Liquor we make; it is prodigiouſly deſtructive to Health in many Reſpects; that with Lemons is worſe than that with Oranges; ſomewhat of the Nature of this is Cyder, eſpecially the ſharp Kind.

Drams.

I Cannot mention theſe Doſes without Pain; they are the moſt deadly of all Liquors, and which continue in uſe, notwithſtanding the late Prohibition: Drams are near as ſure Death as a Sword, tho' a little ſlower about the Work. The moſt dangerous is that call'd Uſquebaugh, which if made by the fineſt Receipt, is loaded with Saffron, beſides other hot Ingredients; which Saffron in the Hands of a Phyſician is of great Uſe in Medicine; but if uſed too freely, is a Fire; for it will raiſe Bliſters and corrode; and I know a Preparation of it ſtronger than any of the burning Cauſtics Surgeons uſe, and more violent to the Fleſh than boiling Oil. Brandy and Rum are the moſt hurtful in reſpect of the great Quantity of ardent Spirit they contain, and compound Drams in reſpect of the hot

hot æthereal Oils they receive from the Ingredients they are compoſed of. In a Gallon of Brandy there is about two Quarts and a Pint of Spirit; in five Quarts of a made Dram, there is but two Quarts of Spirit. Geneva ſo much eſteem'd by the Vulgar, is indeed a vulgar Compound, being the Product of 30 Gallons of Water, and ten Gallons of Spirit, ſuch as we burn in Lamps, with a Quart of Oil of Turpentine diſtilled together. It is an Error to think the *Hollanders* can make this Liquor better than we; theirs generally being done of *French* Brandy which they have cheaper, and we uſing common Malt Spirits, occaſions the Difference; but give the *Engliſh* Operator Brandy, and he will outdo the *Dutchman*; for Diſtillation or the Manner of Compounding is much better known here than abroad.

This I have obſerv'd touching ſtrong Liquors, *viz.* that if a Man drinks any determinate Quantity of Wine, and at another Time Brandy diluted by Water, ſo as to have an equal Quantity of ardent Spirit and watery Parts in each, he ſhall find more Inconvenience from the Brandy and Water, than the Wine; for the Brandy and Water cauſe the Cholic and a Pain in the Stomach, and affect the Head, which we may ſuppoſe to proceed from this Reaſon, that the Brandy having been rarify'd and rais'd in Diſtillation (which Wine has not) it's Spirit or Parts are in a more active pungent ſtate, and fitter to bring about the uneaſineſs complained of. Our ordinary Sort of People are more addicted to Drams than any People in the World. Drams in *France* (except Brandy, which they are not fond of) are ſold dear, ſo that they come but little among them; and

in

in *Holland* and *Flanders* it is not ſo common to ſee People drunk. *Touchmanus* the Poet indeed accuſes the *Germans* his Countrymen of Drunkenneſs, by ſaying,

Germani poſſunt cunctos tolerare labores,
O utinam poſſent tam bene ferre ſitim!

But I'll anſwer for our People's outdoing them, than which they can do nothing more conducive to cutting the Strings of Life.

I dare ſay my Readers will be ready to ask, what Things may be uſed for Food, ſince ſo many have been prohibited, and that they will think, *Medicè vivere, eſt miſerè vivere*; but Things being taken right, I believe it will be found, *feliciſſimè vivere*; for after the improper Things for Aliments are ſubſtracted, there will be found a ſufficient Number remaining both to nouriſh and to pleaſe. Touching the Ways of Eating and Drinking, not only *Hippocrates*, &c.

and

and others of the Ancients have left us very good Directions, but the late worthy Dr. *Arbuthnot*, and that very eminent Phyſician of the *Bath* Dr. *Cheyne* have wrote admirably thereon, whoſe Works I could wiſh to be in every one's Hands.

All plain Meats then ſimply dreſs'd, no doubt, are generally good Foods, but the boil'd is much more eaſy of Digeſtion than roaſted, whence better for weak Digeſtions: Of all Meats, Mutton is eaſieſt of Diſtion. All Fowls likewiſe, tho' ſome of them are of a ſtronger Nature than others, which are generally known.

Fish likewiſe are proper Nouriſhment, except the few that are known to diſagree with Perſons, as Sprats and Herrings: There are ſome indeed poiſonous in the *Weſt-Indies*, *Vide* Sir *Hans Sloane*'s Natural Hiſtory of *Jamaica*;

Jamaica; *Catesby*'s Hiſtory of *Carolina*, &c.

Vegetables, if boil'd, are very good, ſuch as Beans, Peaſe, Parſnips, and the Herbs uſually in Uſe; the moſt innocent of all are Turnips; but a Man needs to eat a good deal of them, they being full of a Juice amounting to little more than Water; for if twelve Pounds of them be laid in the Air, eleven Pounds will be carried off thereby; and that which is capable of going off ſo, I believe would afford no Nutriment to us, if taken into the Stomach.

Millet and *Rice* are very good, the laſt of which ſhould be well boil'd, if the Eater of it is ſubject to be looſe. Milk is very good for Perſons who drink ſmall Liquors, but with thoſe who drink ſtrong it does not ſo well; becauſe the Acrimony in thoſe Liquors forms a Coagulum or Curd, whence

whence Inconveniencies ariſe: A Man in St. *Martin*'s Workhouſe did eat Milk, and after it drank ſtrong ſtale Beer, after which he vomited a curdled Matter as long and as big as the biggeſt of a Man's Fingers.

I am ſpeaking here of what Perſons in Health may eat; when they are ill, Phyſicians know beſt how to direct a Regimen. Touching the Quantity to be eaten, I am not for directing Weight or Meaſure; ſome People muſt have more than others, eſpecially the working Sort, or who uſe much Exerciſe: In the Morning a few thin Slices of Bread and Butter, or a little of the Things made at the Paſtry-Cook's, without Almonds or hot Seeds may be eaten, and a little Gruel, Whey, Barley-Water, Sage Tea not made ſtrong, Baum or Ground-Ivy Tea may be drunk; but if the other Teas muſt be had, to uſe them ſmall, adding thereto Milk.

At

At Dinner let plain Things be eaten, and let them be dreſſed rather by a Cook of ſix Pounds a Year than ſixty: Alſo be it a ſtanding Rule to riſe with Room for a little more, and not to fill the Stomach too full; for then it cannot do its Office of Digeſtion ſo well, and when preſſing on the Diaphragma, it hinders the Play of our Lungs, and we are made uneaſy in our Breath.

At Supper very little ſerves, any little Thing from the Paſtry-Cook's, not having in it Meat or any Thing of the Animal Kind, does well; but the leſs the better: I am ſure we ſhall live the eaſier, and the longer by this Rule.

Perſons err prodigiouſly in their Notions about Foods; they imagine it's impoſſible to have too much of ſo neceſſary a Thing as Victuals. The Deſire of pleaſing the Palate in us is very ſtrong; we dig our Graves with our Teeth: That which ſhould pre-

ſerve Life to us, bereaves us of it; Strange Error!

It is an Error to quit Meat, and to take to Vegetables altogether, except in Caſe of the Gout, &c. for Meat or Animal Foods are neceſſary once a Day for moſt People, at leaſt in the colder Climates; for upon an Analyſis or Examination of Meat, and the Subſtance of Human Bodies, they are found to conſiſt of the ſame Principles or component Parts, and are therefore proper for us.

Laſtly, Our Drinks.

I am ſteadfaſt in the Opinion, that Water, and watery Liquors are the Liquors of Life: By watery Liquors I mean (which are all proper Drinks) Barley-Water, Gruel, Whey, Milk and Water, freſh ſmall Beer, Milk-Water, &c. Water is the Liquor of the Univerſe; it's the Life of Animals and Plants, and ſhould be of Men; and the only true Digeſter:

All

All ſublunary Things are Water and Earth; we are ſo our ſelves. It is a great Error to imagine Strong Liquors ſupport and comfort us; the Comfort is falſe, and but for a Time, and leaves a Poiſon behind: however, I would not rob thoſe of them on a ſudden, who have been accuſtom'd thereto; yet deſire them to believe, that the leſs they drink, the leſs Pain they will feel in Life; and the longer Life itſelf will be. This is my Opinion, and by theſe Rules I ſhall ſteer my Courſe; however, I am reſolv'd to enter into no Controverſy about the ſame.

P. S. Speaking here of Health, I would add one more Caution, tho' of a different Kind, *viz.* Not to ſuffer Children to be ſwung in a Swing by the Neck to make it longer, as is the preſent Cuſtom; for I have known Miſchief enſue

from it twice, when one Child got a Tumor on the Cheſt, and another fell into ſtrong Twitchings as if convulſed.

OBSER-

OBSERVATIONS AND EXPERIMENTS

On ſome Parts of the

Materia Medica, &c.

Whence will appear the preſent Miſtakes about the Same.

PART II.

DEſigning to write at large on the *Materia Medica*, I thought to defer mentioning the Subjects herein ſpoken of till I could produce that Work;

Work; but as I know not when I may bring it forth, and as ſome Things are highly neceſſary to be known, leſt Inconveniencies ſhould ariſe for Want of ſuch Knowledge, I reſolv'd to print them firſt in this Miſcellaneous Way.

Experiment I.

Bole-armeniack is held to be an Alcali or Abſorbent, and truſted to as ſuch in Practice; which is a great Error, it being no ſuch Thing; for being try'd with all the Species of Acids, it lies quiet, making no Efferveſcency therewith. If acid Spirits be poured on *Bole*, they are drawn off again, having the ſame *Vis* or Strength as when they went on, which cannot be done from true Alcali's. This Subſtance or Part of the *Materia Medica* is ſo far from being an Alcali, that if puſh'd with a ſtrong Heat in Diſtillation, it gives an acid Spirit; for it contains an

Acidum

Acidum Vitriolicum. Moſt of the *Bole* found in the Shops is only Pipe-Clay and Red Oaker ground up together.

EXPER. II.

Terra Sigillata, and *Lemnia* are alſo accounted Alcali's, but are not ſo, which is evident from the ſame Experiments of trying with Acids, *&c.* as with the *Bole*: Moſt of theſe in the Shops of the *Falſarii* are Pipe-Clay and Oaker likewiſe.

EXPER. III.

Saffron, in the Hands of a Phyſician, is, doubtleſs, of great Uſe; but dangerous to be play'd with: it contains a very active pungent or corroſive eſſential Salt. I know a Perſon who made a Mixture of Saffron and Spirit of *Roſemary*, which he apply'd to the *Abdomen* of a Child, and the Part was greatly inflam'd and excoriated; and worſe would have enſued,

ſued, had not Means been uſed. If after the Tincture of Saffron be made, the *Magma* or Preſſings be apply'd to the Skin of a Perſon, Bliſters will readily be raiſed; and *Johannes Weidenfeldius*'s Spirit of Wine will make an Extract of Saffron one of the moſt violent Cauſtics in the World. A learned Phyſician inform'd me that a Man ſtole a Pound of Saffron in a Paper, which he hid in his Boſom next his Skin, ſoon after which he fell into a Vertigo, Apoplexy, and died. Other Authors likewiſe ſpeak of the violent Effects of this Flower.

EXPER. V.

Calcined Harts-horn: There is nothing in the *Materia Medica* that Perſons err more in than this Ingredient: It is monſtrous that any Writer, at all vers'd in Chymical Enquiries, ſhould dream that it is an Alcali or Abſorbent; for on Trial it will

will be found to be no ſuch Thing; and indeed, without Trial a Man ſhould know that; for by Calcination the Volatile Salt, Phlegm, Spirit and fœtid Oil are all driven away, when there remains only a dead Earth; for, I hope, no body will aſſert the Exiſtence of a fixt Salt in Animal Bodies. Some indeed have ſaid they have found a fixt Salt in Blood after Combuſtion, which if they did, it muſt be in Human Blood, and proceed from the Marine Salt taken in with the Aliments; for Sea-Salt is a *Salſum*, partly alcalious, and partly acid, which Acid being driven off by Fire, an alcalious Earth remains. But to return to the Hart's-horn, which I ſay is no Alcali, nor of any Uſe in Medicine; it is one of the Ingredients of the good Wives favourite Gaſcoin's Powder, and continues in Families to be the Baſis of a white Drink truſted to in a Diarrhœa and

Dyſentery, in which I'm ſure it is of no Uſe: and I wiſh I could not ſay worſe Things of it; for ſuſpecting this ſubſtance, Oyſter-ſhells, Egg-ſhells, Coral and the like calcinated Things to be a Kind of Lime, I conſulted Dr. *Groſs* a *German* Phyſician at *Paris*, and one of the firſt Chymicus's in *Europe*, who confirmed me in my Opinion, acquainting me that he had known Burnt Hart's-horn given for ſome time to the Quantity of a Dram for a Doſe, and the Taker of it died thereby. It is true we often ſee the white Drink uſed without any Harm, becauſe it is order'd by the Receipt to be ſtrained or the Hart's-horn is ſuffer'd to ſubſide, whence little goes down into the Stomach; for the boiling diſſolves none of it. In my Conferences with the firſt Profeſſor of the Univerſity of *Doway* while there, I found this Ingredient not in Eſteem in *Flanders*.

Exper. V.

Diſtill'd Milk is thought by many to be no more than common Water, and therefore us'd by few in making the Milk-water; but that is an Error, for Diſtill'd Milk will make a ſmall Precipitation in a diluted Solution of Mercury, which pure Water will not do, which ſhews that it contains ſome volatile animal Salt.

Again, let Diſtill'd Milk be kept nine or ten Months, it putrifies, and a ſlimy Matter falls to the Bottom of the containing Veſſel, which being catch'd by a Filter, and dry'd, then put upon a red-hot Iron, it burns, glows, and evidently ſhews a Phlogiſton or inflammable Part, exhibiting the Appearances of an *Animale quid* ſo treated.

Exper. VI.

Plantain, *Celandine*, *Eyebright*, and the like cold ſimple diſtill'd

Waters are thought by many to be no better than elementary Water; but if kept an Year, or leſs, they putrify, letting fall a *Mucus*, which if ſeparated by the Filter, dry'd, and laid on a hot Iron, as in the laſt Experiment, it exhibits the Appearances of a Vegetable when burning, which ſhews thoſe Waters are not ſo ſimple as conjectur'd to be.

EXPER. VII.

Cochineal: This is now pretty generally known to be an Animal, or Kind of Lady-bird; but it is Matter of Wonder any heretofore ſhould doubt of it, or contend for its being a Berry, *&c.* for do but put it into a coated Glaſs Retort, and ſurround it by Fire, you will have the ſame Spirit, as Spirit of *Harts-horn*, a Phlegm, Salt, and fœtid Oil, and remaining an Earth without Salt, which ends the Diſpute.

EXPER.

Exper. VIII.

Juice of Lemons is distill'd with the other Ingredients to prepare the *Treacle-Water*, in order to have an Acid to excite Sweat, which is a great Error; for neither this Juice, nor that of *Verjuice*, nor *Seville-Oranges* come up sour in Distillation, neither in the cold Still, nor *in Balneo*, where it comes to a boiling State; and for this reason, *viz.* That they have not yet undergone the last Vegetable Putrefaction, which Vinegar has done, and for which reason it rises sour in Distillation; tho' a great part of the Acid of Vinegar remains behind when distilled, which is easily perceiv'd by tasting the Remainder, which is very pungent to the Taste; and on trying Distilled Vinegar with Vinegar Undistill'd, the last will be found more sour than the first.

Exper.

Exper. IX.

Mercurius Vitæ or the *Emetic Powder* of *Algarot*, is thought to be *Mercurial*, and uſed as ſuch; however it is not ſo, but *Antimonial*, and the *Cinnabar* of *Antimony* made of the ſame Ingredients is the *Mercurial* Medicine; the Caſe ſtanding thus, *viz.* The two Ingredients are *Sublimate* and *Antimony*, the Salts of the *Sublimate* join the reguline Part of the *Antimony*, and form the *Butter*, of which the Powder of *Algarot* is made; and on the other hand, the Sulphur of the *Antimony* joins the *Mercury* of the Sublimate, and forms the *Cinnabar*.

Exper. X.

Phyſicians are appriſed of what little value *Bezoar Stone* is; but the good Wives and Nurſes yet continue its Uſe, notwithſtanding they give an Ounce and half of Gold for an Ounce

Ounce of it: I am convinced it is a Whim, for which we may uſe *Crabs Eyes* mixed with a very little grated *Nutmeg*. The Renowned Profeſſor *Boerhaave* ſays of it, *Laudatur quia pretioſus*. Upon this Drug I intend further Experiments.

Exper. XI.

Laudanum Liquidum affects People's Heads, and begets *Nauſea's*, eſpecially if given in a larger Doſe, as it is particularly requiſite after cutting for the Stone: the following does better; Take an Ounce and quarter of Opium, cut it ſmall, put it into half a Pint of common Water diſtilled, letting it remain therein 24 Hours, often ſhaking it, then philtre it, and add thereto three Ounces of Spirit of Wine, it's done; by which proceſs you avoid the Reſin, or Sulphurous Part, which is what makes the Medicine offend. Thoſe who approve of adding the other uſual

Ingredients

Ingredients of the *Laudanum* for Correction, &c. may do it when the Spirit of Wine is added, and then digeſt.

Exper. XII.

Having heard ſome aſſert, that the *Aqua ſpermatis ranarum* contain'd in it a volatile animal Salt, I made a Solution of Mercury in Spirit of *Nitre*, diluting the ſame by diſtilled common Water, into which I poured *Frogs Spawn Water*, which made no Precipitation, and which I tryed both with new *Frogs Spawn Water*, and with old; whence I found it a miſtake, it being only a Phlegmatick ſimple Water; and whence I doubt, that a Diſtillation in the ſame Manner from *Snails*, and *Worms*, would be of no great uſe in Medicine; whereas Decoctions of them prudently managed might.

Exper. XIII.

It is aſſerted by moſt that *Ants* afford an acid Spirit in diſtillation; and that being infuſed in Water, they communicate a Sourneſs thereto, ſo that the Infuſion will effervesce with Alcalies; whence they conclude this Animal to differ from all others, the reſt of the Creatures all giving an alcalious Spirit: but if this matter be better examined into, we ſhall find that this Acidity is not a part of the Animal, or one of the Principles of which he conſiſts; but proceeds from what he carries on his Thighs, and Legs, a Vegetable Production; and that if this Creature be cleared of that adhering Matter, and then diſtilled, *&c.* an Alcalious Spirit will be obtained, as from other Animals.

The *Bee* likewiſe carries about the ſame Parts his Products, which

are wholly Vegetable, viz. *Wax* and *Honey*.

Exper. XIV.

Philtre Whey, gently exhale a part, ſet it in a Cellar, it cryſtallizes, and you have a Salt; exhale again, you have more: this Salt is the nitrous eſſential Salt of the Graſs eaten by the *Cow*, joined to an Animal Mucus, and which being committed to Diſtillation, gives a Phlegm, a ſmall Volatility, a little fœtid Oil, and at laſt a ſmall Acid: This Salt the *French* grind with crude Mercury, as others do with *Crabs-Eyes*, which they chuſe to do, as believing *Crabs-Eyes* may foul the Glands of the Stomach, or clog the Mouths of the Lacteals, which they ſay, this Salt will not do. The *French* adviſe it in Conſumptions; but I cannot ſee how any Thing that incides or divides can be good in ſuch a Caſe; which I refer to the better Judgment of our Phyſicians, who,

who, I am very sure, excel, and go deeper into things than any in the World; as do our Surgeons too, notwithstanding the great Opportunities the *French* have; and, I believe, I may say the same of my Country-Men the *Apothecaries*.

Exper. XV.

The Process of making the Præcipitate *per se* being very tedious, and I hearing a *French* Physician say, that it might be done by frequently distilling the crude Mercury; I put Mercury into a Retort, and distilled it up many times, when it came up as fluid the last Time, as the first; whence I found the *French* Gentleman had not worked thereon himself; and that there is no other way but by giving it time, and dividing by Pebble-Stones.

Exper. XVI.

Pulsatilla, being distill'd with Water, it rises white, and catches

the Noſe when ſmell'd to, and being kept ſix Weeks, lets fall a Salt, which is not diſſolved by Acids nor Alcalies, and hardly by warm Water.

Exper. XVII.

Talking with Dr. *Cantwell*, at *Paris*, about the Poiſon of the Laurel-Water, he aſſerted, that the Water of the *Laurus triumphalis* or Bay, is an Antidote againſt that Poiſon, which I ſhall try at leiſure, as others may do.

Exper. XVIII. *On Phoſphorus.*

Our Phoſphorus, being given internally, it had no other effects than occaſioning a great *Crepit. Ventris*, or breaking Wind downwards.

Exper. XIX.

On the Æthereal Spirit.

The Æther or æthereal Spirit being taken internally by miſtake, it prodigiouſly diſorder'd the Man, flung

flung him into Vertigo's, and made him ill for three months, he saying (to use his words) he thought himself bewitched, and did not know how to describe his disorder; but fifteen Drops were taken.

Exper. XX.

Upon Myrrhe by a *French* Physician, *viz.* Take the best Myrrhe, dissolve it in a *Lixivium* of Pot-Ashes, then distill with Water in a small Alembic, or a Retort placed in water, and you will have a small portion of a Chymical Oil, which will have the natural smell of Myrrhe. The same Gentleman, upon Jalap; Take Jalap, make a Tincture in Spirits of Wine, precipitate that Tincture by Water; when the Resin is sunk, exhale that Liquor to an Extract, which Extract will purge stronger than the Resin of Jalap itself. Again, if you draw a Tincture from the said Extract with Spirit of Wine, that Tincture will not

not be precipitated by water. Again, Take Opium, make a Tincture in Spirit of Wine, exhale it gently to an Extract, diſſolve that Extract in diſtill'd Water, which perhaps will not take in more than the fifth or ſixth part, which Liquor will be as ſtrong again as the firſt Tincture, and will not be precipitated in an aqueous, nor a vinous Menſtruum; theſe on Myrrhe, Jalap, and Opium I have not try'd myſelf.

Exper. XXI.

Amber prepared is accounted an Alcali or Abſorbent, which is as great an Error as that about Bole-armeniac, &c. for upon all the proper tryals it will be found not to be ſo. If we take it to pieces by a Chymical Analyſis, we meet with an acid Spirit, and an acid Salt: This Ingredient is a Bitumen of a Texture or Make that cannot be altered or worked on by the Stomach; and indeed

indeed we find it difficult to diſſolve by any Menſtrua, but the Æther; it is of no uſe in Medicine in a crude or levigated State.

XXII. An Obſervation; A Man at *Rotterdam* went into a Druggiſt's Shop, where he called for half a pint of Oil of Turpentine, and deſired the Shopkeeper to lend him a Glaſs, which having received, and put the Oil thereinto, he drank half of it, and went away, deſiring him to let it ſtand a little; and returning in half an hour, drank the reſt: after which Doſes he was frequently ſeen in the Streets, which was a ſurpriſe to the Phyſicians, and indeed to my ſelf; It was not known whether he went and drunk Water.

Since I came to *England* I mention'd this to an eminent Phyſician, who acquainted me that he knew half a Pound drank by a Man, who was only ſtrongly purged thereby.

XXIII.

XXIII. An Obſervation; *Elixir Vitrioli* is an admirable Medicine, but as managed in the Diſpenſatories is ſpoil'd by the too great Quantity of Oil of Vitriol; for they order above as much again of the Acid Oil as is neceſſary, which inſtead of preſerving the Æthereal Oils, or fine Parts the Ingredients have to afford, burns or calcines them to a Coal. *Quincy*, a good Judge of the *Materia Medica*, orders Spirit of Vitriol, and Oil of Vitriol, which muſt be a Blunder of the Printer, as muſt the next Proceſs for the *Tinctura Stomachica Amara*, where Spirit of Vitriol is alſo directed; he ſurely intending Spirits of Wine, which if he does in the *Elixir Vitrioli*, he errs in ordering a Pound of Oil to a Pound and half of Spirit of Wine, which is too much of the Oil; for half a Pound of Oil is enough for four Pounds of Spirit of Wine: Into this ſame Error does *Staphorſt* run,

run, who certainly was a good *Chymicus*.

XXIV. An Obſervation; *Ens Veneris* is ordered in the Diſpenſatories to be made of Salt of *Steel*, or *Vitriolum Martis*; but I would willingly know how then have we an *Ens Veneris?* Which Difficulty is endeavour'd to be cleared in *Quincy*'s in vain: The Truth is, we ought to uſe *Caput Mortuum* of *Dantzick* Vitriol, the Baſis of which Vitriol is Copper. Others direct blue Vitriol; but this will not make the Medicine red, which is expected to be. *Staphorſt* the quondam Operator at *Cambridge*, and at *Apothecaries-Hall*, runs alſo into this Error.

XXV. An Obſervation; *Millepedes*, or *Hog-Lice*, it is the Cuſtom among many People to roll theſe Creatures up like a Pill in their Hands, which is eaſily done, and ſwallow them alive for Medicinal

Uſe, which a Woman having done, the next Day ſhe was very uneaſy in her Stomach, of which ſhe complain'd to a Surgeon, who after ten Days ſwallowing the Creatures, gave her an Emetic, when the *Hog-lice* came up alive together with the Vomit; whence we ſee 'tis improper to ſwallow ſuch Animals alive.

One of the firſt Surgeons of *Dublin* had a Woman under Cure for a Caſe, in which ſhe likewiſe ſwallowed live *Hog-lice* unknown to him; which Woman dying of the Caſe ſhe was under, and being open'd, the ſaid Creatures were found alive and crawling in her Stomach; which Account I relating to Dr. *Renaud* Phyſician to King *Staniſlaus*, he told me he ſaw a Boy take a *Scarabæus Roſaceus* or *Roſe Beetle*, which he wrapt up in *Butter*, and gave to a Dog, who ſome ſmall time afterwards began to ſtare and look wildly about him, turning his Head

about

about ſeveral Times, as if he heard ſome noiſe; when on a ſudden he ran furiouſly away, and was miſſing the whole Day; and returning at Night, he was almoſt fatigued to death with running, which he had done to get rid of the Uneaſineſs in his Stomach occaſioned by the Creature's crawling there with his rough Feet.

Other Miſcellaneous Subjects.

Lapis quadratus Luſitaniæ: or, the four-ſquare Stone of Portugal.

EXPER. XXVI.

THIS being Chimically examin'd, appears to be a Pyrites of Iron, which being powder'd, and the Magnet being held over it, it attracts it: Again, if diluted *Aqua Fortis* be poured upon it, and ſuffer'd

to lie upon it a little while, and again diluted when it comes off, and then introduce into this Liquor powder'd Galls, you have a Purple Tincture or Colour, such as Martial Liquors usually afford: This Mineral is likewise found in *Saxony* and *Misnia*.

XXVII.

There are usually found upon Turnips little Hillocks or Excrescencies, in every one of which there is a kind of Insect or Worm; so that it is best to fling those parts away, whenever we dress them for eating.

XXVIII. *Aurum Fulminans.*

Having about three Drachms of this Medicine lying upon a Balneum Heat, I went to it next Day to see whether it was dry, when thinking all things were grown cold, I began to unwrap the Paper to view it, when it instantly exploded with a ter-

terrible Noiſe, and exhibited a Flaſh of Light, which is a Phænomenon I have not heard taken notice of by others: This Exploſion of the thundering Gold hurt both my Eyes, occaſioning a great Flux of Blood to them: It alſo gave a great Contuſion to my Hand, by ſtriking its Force downwards, which is contrary to the Aſſertion of others who write upon this Subject, and ſay, that it only gives its Force upwards, or ſideways.

XXIX.

A Man brought a certain Mixture to a Chymiſt in *London*, which he deſired to have diſtilled, which the Servant in the Abſence of the Maſter took in to work upon, which he having ſet a doing according to the Orders he had received, went down to Dinner; in the mean time the Mixture blew up with a terrible Noiſe, breaking

the

the Veſſels, and was almoſt like to blow the Chimney down, which the Maſter of the Laboratory coming to be acquainted with, enquired of the Perſon that brought it, what it might be, who anſwer'd, that it was a Mixture of Honey and Nitre: So that tho' Nitre alone is not inflammable, yet the Sulphur or phlogiſtic part of the Honey had afforded Fewel to it, whence a Kind of Gunpowder was formed. This is inſerted, to guard others againſt working on the like Subjects in the ſame manner.

XXX.

If a *Frog* be put into a Box, and holes bored therein, and the ſaid Box be laid near a Neſt of *Ants*, the *Ants* will entirely diſſect the *Frog*, and make the fineſt Skeleton poſſible of him, leaving even the Ligaments unhurt. If a *Mouſe* be put into the ſame Box, and his Skin taken off,

theſe

these little busy Creatures will make as fine a Skeleton of him too; but if the Skeleton be left with them long, they will likewise go to work upon the Ligaments.

XXXI.

The Yellow Matter or Substance cast out of Mount *Vesuvius* in *Italy*, and sold in the Colour-shops by the Name of *Naples-Yellow*, is a Kind of Oaker, and upon an Analysis affords a small quantity of Iron.

XXXII.

Crude Sulphur and Quick Lime being mixed together in about equal Parts, and put into a Vessel, and cover'd with Earth, will in no long time afterwards burst out into a Flame, and fling up the Earth: This I had of a *German* Physician; I have not try'd it: May we not hence account for Vulcano's and Earthquakes?

XXXIII.

XXXIII. *On the Viper.*

It was proved at *Paris*, that the Head of a *Viper* 24 Hours after being ſever'd from the Body, would bite a Man, ſo as to occaſion the uſual Symptoms, and which happen'd to an *Apothecary*'s Journeyman there. This is a Creature of prodigious Life and Vigour; for after the Head is taken off, and the Skin, and all the Viſcera taken out, the Body will ſtrongly vibrate or move in a String fourteen Hours after that.

XXXIV. *Muſtard-Seed.*

This Ingredient gives a Phoſphorus, which is a Phænomenon few would expect.

XXXV.

Black Gliſtering Writing-Sand.

This being Chymically examin'd, appears to be a Minera of Iron.

XXXVI.

XXXVI.

Hair-Powder is often adulterated or mixt with Lime, which if ſo, will be diſcovered by this Experiment, *viz.* put a little powder'd crude *Sal Armoniac* to the ſuſpected *Hair-Powder*, adding a little warm Water to the Mixture, and ſtir it about, when if it was adulterated with Lime, there will be perceived a ſtrong ſmell of *Sal Armoniac*, becauſe the Lime will volatize the *Sal Armoniac*, from the known Reaſon of it's receiving into itſelf the Acid that held the volatile Salt, which is then ſet at Liberty.

XXXVII. *Acid Spirits.*

It has been aſſerted by ſome, that all acid Spirits may be reduced to Elementary Water by repeated Diſtillations; but I believe this to be an Error; for being diſtilled an hundred Times, they came up acid to the laſt.

XXXVIII.

Rain-Water, being catch'd in Glaſs, and not ſuffered to come near any Vegetable Subſtance, or Veſſel of Wood, will keep good 40 Years, which has been experienced; and it is to be believed would do ſo longer.

XXXIX. *Diſtill'd Water.*

This being likewiſe kept in Glaſs, as aboveſaid, has been found to keep good ten Years; and, I doubt not, would keep a great while longer.

XL. *Eggs.*

Eggs being placed under a running Water in a Rivulet, have been found to be good and eatable two years afterwards; and which being put under a Hen produced Chicks. Eggs being alſo cover'd with a proper Varniſh will be good a year afterwards, and being laid under the Hen, produce Chicks likewiſe.

XLI.

XLI. *Bitters.*

Bitters are ſeldom found to riſe in Diſtillation; but ſome Kinds of the Colocinths have been proved to give a bitter Taſte in Diſtillation.

XLII. *Gall Stone.*

This Concretion is prodigiouſly ſulphureous; for it ſwims on Water and burns like Camphire, whence it differs from the Stone in the Bladder.

XLIII. *On Toads*, by the late Baron *Schack*, Envoy of *Moſcovy:* Take three or four live black Toads, put them into a Bag, add thereto three or four Pounds of Kitchen-Salt, ſhake them about till the Toads are dead; a little of this Salt he aſſerted is a violent Poiſon. This Gentleman alſo aſſerted, that a Countryman lying aſleep upon the Ground, with his Boſom open, a Toad crept upon him, and laid

upon his Breaſt; where the Part afterwards was very much inflam'd: which Things, if Fact, prove ſome Toads, at leaſt, poiſonous, which is denied by many Naturaliſts.

XLIV. *Acid Spirits.*

To concenter them, and render them of a double Strength, take *Lapis Calaminaris*, powder it, pour any acid Spirit upon it you have a Mind to make your Experiment on; diſtill gently; there comes over a Phlegm, which take away, and add thereto another Receiver, puſh the fire, and there will ariſe the heavy Acid Spirit much ſtronger than before.

XLV. *On Glaſs.*

To reduce Glaſs again, take Salt of Tartar or Pot-Aſhes three parts, add to it one part of melted Glaſs, expoſe it to the Air, and it is no more Glaſs; it's Earth may be precipitated with Vinegar;

Vinegar. This was asserted by a *French* Physician, I have not tried it.

XLVI. *A Spirit prodigiously volatile.*

Take double *Aqua fortis* one Ounce and a half, Quicksilver an Ounce, let it dissolve, and stand till it is near cold, not quite, for fear it should crystallize, then put it to two Drachms of the best *French* Spirit of Wine, shake it about, it looks Milky, and there will be perceiv'd upon the uppermost Part a Kind of Oil, which you must nimbly separate by a Glass-Funnel, by stopping the Stem with the Thumb, by withdrawing which a little, you let out the lowermost Liquor till you come to the uppermost, which is what you want, and which must be convey'd into a Bottle with a Glass-Stop, or else it will be gone; if you don't succeed the first Time, you must try again till you do: This

Spirit

Spirit or Oil is ſo volatile, that a Drop being let fall from a Height of five or ſix Feet it does not go to the Ground; or if you drop a Drop on your Nail, you'll ſee it riſe into the Air: This Preparation is much more volatile than the Æthereal Liquor.

XLVII. *A Spirit that is always in a Fermenting State, or in Motion.*

Take Block-Tinn two Ounces, diſſolve it in *Aqua Regia*; take alſo thin hammer'd Lead an Ounce and half, diſſolve that in *Aqua Fortis*, mix the two Solutions, add to them an Ounce and half of Antimony, and two Ounces of Mercury, put them into a Glaſs Retort, join a Receiver, lute it, leaving a Pin-hole in the Lute, diſtil, there comes over a white Spirit, which muſt be kept in a Glaſs with a Glaſs-ſtopper, ſo as to be but half full, to give it room to move. To hammer Lead thin you muſt

muſt do thus, *viz.* put many pieces of Lead one upon another, ſo beat it out, then you can diſſolve it, otherwiſe not. Written to me by a *German* Chymiſt. *I've not try'd it.*

XLVIII. *To receive Mercury without Diſtillation.*

Take *Sublimate*, add to that an equal weight of Filings of Steel, pour thereon a Quart or more of Water, boil; and before the Water is boil'd away, you'll ſee the Mercury running.

Of the Danger the Publick are under from the preſent Male-Practices in Medicines, and Drugs, &c. with the Ways to diſcover and avoid the ſame.

IN the former part of this Work, and former Edition, I have mention'd a Deſign to write *ex profeſſo* on

on the *Materia Medica*; in order to ſhew the Miſtakes about the ſame. There is another thing full as neceſſary as that, on which we wou'd likewiſe ſay ſomewhat in theſe Papers, *viz.* the ſhocking ill Practices, Adulterations or Sophiſtications in Medicines both Chymical and Galenical, as well as Drugs; which are grown to ſuch an height now, and thereby the Health and Life of Mankind ſo play'd with, that there are no Crimes Men commit that more loudly call out for a Law for Puniſhment than they. This is obvious and plain at firſt view; for if a Medicine that coſts the faithful Preparer four Shillings per Pound to make it, be ſold by ſome of the Moderns for twenty Pence (as is done) we need no mathematical or logical Reaſonings to prove that the ſaid Medicine muſt be a Fraud.

It is theſe wretched Practices that have brought the moſt noble Science,

Chymiſtry,

Chymiſtry, into contempt, and made it now as much a Trade as Shoemaking, *&c*, *&c*. But I hope yet to ſee it revive, and bear the eſteem which That great Revealer of Nature's Works deſerves.

Far, I ſay, far be it from me to deſign in the leaſt to give offence to honeſt Perſons and Men of Integrity, concern'd in Medicines and Drugs, ſuch being yet, I hope, to be found among us; who, I doubt not, will readily join with me in this Search; and as to the Guilty, I am not anxious about what they think.

A Diſcovery of ſome of the moſt flagrant ill Practices in Medicines and Drugs, &c. viz.

I. *Flowers of Sulphur.*

THIS is often only vulgar Roll-Brimſtone powder'd, which it ſelf is an adulterated thing, and ſuch as

Matches are made of and having Spirit of Vitriol added thereto, which a Patient of an Apothecary's, a Friend of mine having taken, he had like to have loſt his Life from the Sharpneſs thereof.

This will be diſcover'd thus, *viz.* Pour warm Water on the falſe ſort, and the Sourneſs will be taken out by it, and the Water when ſeparated from it will be acrid; which will not be the ſame with the true.

Again, let a Gallipot be fill'd with the true, and when emptied out, let the ſame be fill'd with the falſe; when let both be weighed, and the firſt will be found much lighter than the laſt. We know that Flowers of Sulphur ſhould be a little more acrid than beaten Brimſtone, becauſe its innate acid Spirit is rarified in ſome meaſure, by the heat the Sulphur receives to raiſe it into Flowers; but that Acidity is ill imitated by our *Falſarii*.

II. *Album Græcum.*

This we know ſhould be Dog's Dung, a thing eaſy to be had, which on examination, I have found to be Lime and Hair made up in that form; which Fraud will be diſcover'd by theſe Experiments, *viz.* Let true *Album Græcum* be diſtilled in a Retort by a good Heat, it affords a volatile Salt, a Spirit and Phlegm.

The falſe Sort will afford nothing but a little that the Hair gives: The true being put on an hot Iron, it gives a copious white Fume for a long time, which is the Exhalation of the aforeſaid Principles. The Lime and Hair will give but little Fume in reſpect to the other, for nothing comes from the Lime.

Let an Ounce of the falſe Sort be rubbed in a Mortar with half an Ounce of crude Sal-armoniac, adding thereto a little warm Water' the Sal-armoniac will be render'd

volatile, and a ſtrong Smell will be perceived; which will not happen on mixing the true with the Sal-armoniac.

III. *Black-Cherry Water.*

This is imitated by a ſhocking Practice indeed, *viz.* by diſtilling Laurel with Water, the direful effects of which, we have had Inſtances not long ſince, both here and in *Ireland:* myſelf gave only three Drachms of the ſaid Water of Laurel to a Dog a foot high, who inſtantly was ſtruck dead. This dangerous Water will eaſily be diſtinguiſh'd from the right by its Taſte, and Heat, and from its having an Oil floating about it, which true Black-Cherry Water has not. It has likewiſe a prodigious ſtrong Scent, as it were of Kernels, whereas that of Black-Cherries is very weak in reſpect of it.

The next Imitation of this Water is by diſtilling bitter Almonds in Water,

in Water, which tho' it is not giving an hurtful thing in the delivering a *quid pro quo*, yet it is letting the Patient go without what the Phyſician deſigns. By this laſt way is almoſt all the preſent *Ratifia* made.

IV. *Syrup of Violets.*

This is done by our Artiſts of Logwood that the Hatters dye Hats withal, coarſe Sugar, and Water; which will be diſcover'd thus, *viz.* The true Syrup will have the ſmell and taſte of Violets; which that of the Logwood will not: The true will anſwer the uſual Tryals of turning green when joined to an Alcali, and red with an Acid; which the falſe will not. The true will not grow black with the other Ingredients of the Hatter's Dye, as that of Logwood will.

V. *Oil of Aniſeeds.*

This is uſually brought from *Tyrol*, and when here, is mixed with half

half its weight of Rapeſeed, or other mean Oil; and to make it candy in the Winter, ſome baſe Parmacitty is added thereto, which Frauds are thus diſcovered: If true Oil of Aniſeeds be dropped on white Paper, and held near the Fire, the Oil will riſe off, ſo as to leave the Paper near clean: But if the ſame Tryal be made with the falſe ſort, the Paper will remain very greaſy; becauſe the baſe Oil in it, and the Parmacitty, cannot riſe off by the heat that is given.

Again, true Oil of Aniſeeds being dropped into Spirit of Wine, it is diſſolved thereby: But the falſe makes the Spirit grow whitiſh, and look thick, becauſe the Rapeſeed Oil, or others mixed with it, refuſe to be diſſolved by the Spirit.

Again, let a Pound of good Oil be put into the Alembic with Water, and diſtilled, it all comes up; let the ſame Weight of the other be put there,

there, perhaps not above half a pound is had; becauſe the Sperm and Rape-Oil cannot riſe by that manner of Diſtillation.

VI. *Crabs Eyes.*

Theſe are a uſeful part of the *Materia Medica*, and often uſed, ſo that it is pity we ſhould not be ſupply'd with the genuine thing: They are imitated by making up Pipe-clay in the form of *Crabs Eyes*, which Clay is no Abſorbent, nor of any uſe in Medicine; of which if we ſpeak to our Sophiſticating Artiſts, they will tell you they give nothing hurtful in the Subſtitution. But if a Patient dies for want of the Medicine intended by his Phyſician, I would know how far ſhort of poiſoning him this falls? The Fraud is diſcover'd thus; ſtrike on the true thing with an Hammer till it breaks, and obſerve the Surface within, which looks like poliſhed white Marble; the adulte-

rated

rated looks rough, as it were a Powder ſtuck or caked together.

Again, pour any acid or ſharp Liquor on the true, a great Effervescency or Stir is ſeen; pour the ſame on the falſe, all lies quiet.

Again, diſtill the true in a naked Fire, they give Principles inherent to animal Bodies; diſtill the falſe, they give nothing if dry. Pour diluted *Aq. fort. ſimpl.* on the powdered *Crabs Eyes*, they are diſſolved thereby, and converted into a Kind of Salt, which does not happen with the falſe. It is ſcarce needful to acquaint thoſe not converſant in Phyſic that they are not the Eyes of the Crabs.

VII. *Salt of Amber.*

This Medicine is of great Conſequence in the Practice of Phyſic, and none more adulterated than it: It is imitated by the modern Sophiſticating Artiſts by mixing or gently grinding common or crude *Sal-Armoniac*

moniac with the browner Oil of *Amber*, which Fraud is thus detected: True *Salt* of *Amber* will be diſſolved in Spirit of Wine; the falſe ſort juſt mentioned will not, nor will any other Salts in uſe but *Terra foliata tartari*, and Corroſive *Sublimate*.

If the falſe be mixed with quick Lime, and a little warm Water be added thereto, ſtirring all about, a ſtrong ſmell of volatile *Sal Armoniac* will be perceived; which will not happen with the true.

VIII. *Spirit of Harts-Horn.*

This is much adulterated, as thus, *viz.* ſome of theſe Artiſts are baſe enough to make a Spirit out of Horſe's Bones, or any other Bones that they can cauſe to be pick'd up.

Others mix Lime and crude *Sal Armoniac* together, grinding therewith a few Drops of fœtid Oil of any Bones, and pouring warm Water thereon, by which Proceſs the *Sal*

Armoniac will be render'd volatile by the Lime, and ſo it will catch the Noſe; but the Acid Part of the *Sal Armoniac* will be diſſolv'd as well as the Alcaline, ſo that it is not the Medicine we expect. This Fraud will be diſcover'd thus, *viz.* Put true Spirit of *Harts-Horn* into a Cucurbit or Retort, place the ſame in a Water-heat, the Spirit will all riſe.

Put the juſt mention'd falſe Spirit into the ſame Veſſels, diſtill, ſome volatile Salt and the Water will ariſe, and the acid Part of the *Sal Armoniac* will remain behind.

Again, put two parts of Spirit of Wine to one part of true Spirit of *Harts-Horn* in a Vial, ſtop the Mouth with your Thumb, ſtrike the bottom of the Vial againſt the Palm of your Hand, the fluid Mixture will become a Solid; ſo that if you turn the Vial upſide down, nothing will run out, which is called an *Offa Helmontiana.* Put the falſe Spirit

to

to Spirit of Wine in this manner, the ſame Effects will not enſue.

This Experiment with Spirit of Wine is the beſt whereby to know whether Spirit of *Harts-Horn* be made with Lime; for if it be, it will not coagulate with that Spirit, as the true will. And this Tryal alſo ſhews whether Spirit of *Harts-Horn* be well charged with its own Salt; for if it is not, the expected Coagulum will not ſucceed.

IX. *Salt of Tartar.*

For this we uſually have given us only powdered Pearl-Aſhes, or Pot-Aſhes. The Fraud is known thus, *viz.* True *Salt* of *Tartar* is totally diſſolved in Water: Pearl-Aſhes, *&c.* will leave about a fourth part undiſſolved: If they diſſolve the Pearl-Aſhes, philtre, and exhale, and give us that, the Salt remaining will be whiter than true Salt of *Tartar*,

and be more pungent to the Taſte than it.

X. *Sal Mirabile.*

The true ſort is now ſeldom made; what is vended is only the common *Epſom* Salt in larger Cryſtals; done where Kitchen-Salt is made near the Sea: This is eaſily diſtinguiſhed by the taſte; the true having a vitriolic taſte on the Tongue, and the falſe a bitter one like the *Epſom* Salt. Or,

Diſſolve the true in warm Water, ſet it in a Cellar, it ſhoots into Cryſtals; proceed in the ſame manner with the falſe, it does not give thoſe Cryſtals; becauſe it wants the Acid of the Oil of *Vitriol*, one of the Ingredients of the *Sal Mirabile*, and which is neceſſary to form Cryſtals; and becauſe it has in it too much of the Alcaline part of the common Salt; for Alcalies run not into Cryſtals.

XI.

XI. *Salt of Wormwood, Salt of Broom, of Chamomile, of Juniper, of Aſh, and the like vegetable Salts.*

For theſe we uſually have given us only powder'd Pearl-Aſhes or Pot-Aſhes, or theſe diſſolved, philtred, and exhaled to dryneſs; the Frauds are thus detected, *viz.*

The true Salts are totally diſſolved by warm Water; the falſe above named will leave a fourth part undiſſolved; the falſe are very white, the true are brown, unleſs they are put into a Crucible, melted, and then diſſolved, and philtred, and the Water drove away till they are dry: which if they are ſo treated, they will become more ſharp or pungent to the Nerves of the Tongue than they ought to be.

XII. *Sperma Ceti.*

This is very much adulterated, and chiefly by mixing with Tallow, which

which is eaſily perceived by giving it a friction between the Fingers and the Thumb, and holding it to the Noſtrills, which will have the ſame ſmell as if we rubb'd our Fingers on a Candle; whereas the true *Sperma* ſo try'd has a clean and grateful Scent.

Again, the falſe *Sperma Ceti* will ſoon turn yellowiſh; whereas the true will keep white much longer.

XIII. *Præcipitatum Rubrum*, or *Red Precipitate.*

This is uſually adulterated by mixing red Lead with it; whence this cannot have the ſame Power for a Surgeon's uſe as the true. The Fraud will be diſcovered thus, *viz.* by converting the *red Precipitate* into running Mercury or Quick-Silver by the proper Operations (as all Mercurial Preparations may be done) when more Mercury will be obtained than from the falſe.

Again,

Again, by adding a proper Alcalious Matter to the falſe ſort, and diſtilling off the *Mercury*; and then by treating the Remainder with a proper Flux, when the Lead will be had from it.

XIV. *Native Cinnabar.*

This is uſually adulterated by mixing with it red Lead, ſuch as the Pencils are made of, and not the ſame as juſt now mentioned with the *red Precipitate*, which is made by Fire; ----this Fraud is diſcovered by much the ſame Experiments as in the laſt Article.

XV.

All the purging Medicines in general are likewiſe baſely prepared by ſome; for Example, *Electuarium Cariocoſtinum* ſhould have in it for its purgative, *Scammony*; inſtead of which we have given us *Gum-boge*, which

which is an Ingredient rarely or never now preſcribed by Phyſicians.

Electuarium Lenitivum ſhould have in it Leaves of *Senna*; inſtead of which, *Gum-boge.*

Purging Spirit of *Scurvey-Graſs*, likewiſe *Gum-boge* inſtead of uſing of *Jalap* and *Scammony*, directed by the Diſpenſatory. It is indeed difficult to diſtinguiſh the Fraud in the Electuaries, where there are ſo many Ingredients blended together; but who ever takes ſuch adulterated ones, will ſoon find the Effects in his Health. But as to the Spirit of *Scurvy-Graſs*, the Fraud may be known by dropping it into Water, when that with *Gum-boge* will give a very yellow Precipitation, whereas the right will give a white. Inſtead of the various Spices that Medicines ſhould have, *Jamaica* Pepper, forſooth, muſt ſerve for all by our Artiſts.

XVI.

XVI. *Peruvian Bark.*

This is a part of the *Materia Medica* that is extremely neceſſary, but much adulterated, eſpecially for the uſe of the Country, (for there goes a Cant-Word, *Country-Goods*) whither there goes many Hundred Weight of Oak-Bark dyed in the Dyer's Dye-Pot.

The Fraud is eaſily known by breaking a piece of true Bark and a piece of the falſe, and ſmelling thereto; likewiſe by taſting them both; alſo by breaking the falſe and obſerving the inſide, which will not look the ſame as the outſide; and laſtly, by filling a Gallipot with the Powder of the true, and then filling the ſame with the Powder of the falſe, and weighing them both afterwards, when the true will be found much lighter than the falſe; neither will the falſe give a Reſin like the true.

XVII. *Tartarus Vitriolatus.*

For this Medicine I have ſeen common *Saltpetre* ſerved; this Fraud is eaſily diſcover'd thus, *viz.* by the Taſte, and likewiſe by putting a little of each into the Fire, where the *Saltpetre* will burn or deflagrate, and the true *Vitriolated Tartar* will not.

XVIII. *Diaphoretic Antimony, and Ceruſs of Antimony.*

For theſe Medicines the Buyer often receives Chalk: it's known thus, *viz.* Pour an Acid on either of the genuine Medicines, all lies quiet: Pour the ſame on Chalk, a great Stir or Effervеſcency enſues; the true Medicines will not be diſſolved by Spirit of *Vitriol* or the like Acid; Chalk can be diſſolved. *Diaphoretic Antimony*, or *Ceruſs*, may be turned back again to *Regulus* of *Antimony*, or to *Antimony* itſelf, by chymical Proceſſes: Nothing is had from Chalk.

XIX.

XIX. *Spirit of Turpentine, call'd the Æthereal Oil.*

For this we ſeldom receive any thing but the common Oil of *Turpentine*. It's known thus; Mix Spirit of *Turpentine* with Spirit of Wine, tho' it is not diſſolv'd, or does not unite therewith like æthereal or chymical Oils, yet it does ſo better than Oil of *Turpentine*, for that occaſions a great Whiteneſs, or makes a troubled Mixture. Drop two or three drops of Spirit of *Turpentine* on white Paper, and the ſame number of Drops of the Oil, holding both to the Fire; when dry, that with the Spirit will look clearer than that having the Oil.

Again, put a Pound of Spirit into the Alembic with Water, diſtil, all comes up clean; diſtil as much of the Oil, a reſinous or pitchy Matter is found floating in the Still.

XX. *Chymical* Oils are ſadly adulterated, ſome are mixed with

Sallet-Oil, ſome with Linſeed-Oil, others with Spirit of Wine. If with the ſaid Oils, you diſcover the Cheat thus; mix genuine Oil of *Cloves* or the like with Spirit of Wine, it is clear. Mix Oil of *Cloves* adulterated, as ſaid, with Spirit of Wine, it becomes thick, or looks troubled, becauſe the expreſſed Oil in it refuſes to be diſſolved by the Spirit of Wine.

Drop true Oil of Lavender, *&c.* on white Paper, hold it to the Fire it is exhaled, and the Paper remains clean. Make the ſame Experiment with the falſe Oil, the Paper is left greaſy. Diſtil true Oils with Water in the Alembic, all comes up; diſtil falſe, the Sallet-Oil or Linſeed, that had been mixed therewith, will be found in the Still, and only what was true will ariſe.

If chymical Oils be mixed with Spirits of Wine, and you pour them into a Glaſs of Water, a white Precipitation

pitation enſues; which don't follow if true.

XXI. *Turpeth Mineral.*

This is too often adulterated by mixing with it what is called *Maſticot*, or yellow Lead, which is one of the moſt dangerous Tricks that is play'd: it is diſcover'd thus; if Lime or Filings of Steel be put to the *Turpeth*, and the Mixture diſtilled in an earthen coated Retort *igne aperto*, having a wet Rag tyed to its Pipe hanging in a Baſon of Water; all the Mercury will be had in a running crude ſtate in the Water, and the Salts that held it in diſguiſe will only remain behind with the Abſorbent added. If falſe Turpeth be ſo treated, leſs Mercury will be had from a weight equal to the true juſt named; and beſides, by the Uſe of proper Fluxes the Lead may be had out of the Fæces or Remainder in a crude ſtate; but as ſome of theſe

Exami-

Examinations or Tryals are not eaſy to be made by Perſons not converſant in Chymiſtry, the chief Remedy they have left, is to apply for Medicines and Drugs to Men of Integrity and Veracity; for ſuch, we hope, are yet to be found. Of theſe Subjects more in due time.

Calculus Humanus, or Stone in the Bladder.

THIS Subject has employ'd both the Thoughts and Hands of many great Men, and moſt of them have taken their Hints from *Helmont*, who doubtleſs has delivered many things worthy Notice; however, I muſt confeſs I always doubted his Veracity in ſeveral Reſpects, and account both him and *Paracelſus* to have wrote more on Enthuſiaſtic Principles, than Mechanical ones; the latter of which

which Authors Book in Folio might be reduced to a Treatiſe of a Groat. One of the chief Things or Experiments that has led ingenious Men into a Hope that the Stone will ſome time or other be diſſolv'd by Remedies, is that of Sulphur's being diſſolved by Oil, a mild Menſtruum, which is ſo difficult to be touch'd by other Menſtruums; likewiſe that of divers Stones being diſſolved by a Spirit of Rye-bread. After *Helmont*, the firſt Chymicus's in the World thought of this Thing, *viz.* The Truly Admirable *Boyle*, *Becher*, *Kunckelius*, *Dipple*, who wrote under the borrowed Name of *Chriſtianus Democritus*, Profeſſor *Stahl*, Baron *Schack*, a Gentleman well vers'd in the moſt difficult Part of Chymiſtry, the Mineral; the Profeſſor *Magnificus Bullfinger*, *Roſſer* the Famous Chymicus now at *Hamburgh*, the preſent great Profeſſor *Hoffman*, and the Renowned Profeſſor

feſſor *Boerhaave:* Theſe great Maſters in Chymiſtry have wiſh'd for the effecting the great Work of diſſolving the Stone; and the laſt of which has laboured therein many Years: but theſe truly able Chymicus's not having brought about the Work, I confeſs that I, ſuch a *Tyro* in reſpect to them, could have very ſmall hopes. However, for Amuſement ſake, I made ſome Tryals, tho' without the Succeſs wiſhed for, which I will ſet down, to ſave other abler Inquirers the Trouble of going through the ſame again.

Menſtruums or Liquors tried on the Human Calculus's, out of the Bladder.

Spirit of Manna.
Spirit of Honey.
Spirit of Bread, of Wheat.
Spirit of Sugar.
Spirit of Barley.
Diluted Spirit of Salt.
All the Kinds of Aquæ Fortes diluted.
Lotio Mercurialis diluted.
Spirit. Vitriol. Philoſophic: diluted.
Engliſh Vinegar diluted.
Sour Milk.
Juice of Lemons.
—of Sevile Oranges.
Cyder the ſharper ſort.
Diluted Verjuice.
Sour Small Beer.
Spirit of Guaiacum.
Of Verdigreaſe rectified.
Spirit of Tartar.
Spirit of Rice.
Diluted acid Spirit of Sal Armoniac.
Diluted Eſſentia Diaphoretica.
Diluted Spirit of Alum.
A Solution of Nitrum Antimoniatum.
Wine Vinegar; for all the Vinegar generally in uſe, is only Small-beer, which when in the Hands of the Chandlers or Retailers, has two parts of Water added to it.
Diluted Spirit, diſtill'd from Sal mirabile.
A diluted Solution of Nitr. Fix.
Gas Sulphuris.
A Spirit diſtill'd from Wood Soot.

Many of which Liquors will diſſolve the lighter Chalky-Stones out of the Bladder, ſuch as I had given me by that very able Surgeon Mr. *Freke*; but others that I had of that Maſter of his Profeſſion, Mr. *Cheſelden*, and of the Ingenious and Worthy Gentleman the Rev. Mr. *Hales*, (who has carried this Matter about the Stone further than all others,) were of a prodigious Hardneſs, ſome of which looked like a poliſhed Marble when ſawn aſunder, and which required the ſtrongeſt Spirit of Nitre to diſſolve them.

Portland-Stones, Pebbles, Flints, and Marble may all be diſſolved in ſome time by a mild Menſtruum, which the Stomach or Bladder could endure; but the Animal Mucus in the Calculus, which is one of its component Parts, hinders the Action of the ſtimulating Menſtruum, and thence prevents the Diſſolution of it.

The

The Attempts I propoſed were all by Injection into the Bladders of Dogs, &c. which will bear all the Liquors juſt mentioned; for to attempt by the Mouth, and go the Circulation, to me ſeems a mere Chimæra; and all that have hitherto offer'd to Sale *Noſtrums* to do the Work by that means, have either been deceived themſelves, or had a Deſign to deceive others: But altho' the Dogs bear quietly enough the Injected Liquors, I cannot adviſe putting the ſame in Practice in Perſons, becauſe of the extream Tenderneſs of the Parts, and the need there is of repeated Injections. The Human Calculus being put on an Hot Iron, and preſſed a little by any Thing hard, tumbles to a Grey Powder or Earth, which is diſſolved by *Aqua Fortis ſimplex.*

When *Aqua Fortis* is poured on the Calculus, no Effervescency is ſeen;

nor when *Aqua Fortis* goes on the Aſhes of it.

The Calculus has no Taſte.

Calculi have a Kind of Shell or Cover like Bezoar.

Calculi don't grow any harder by being kept.

Being diſtill'd, there comes forth white Flowers or a volatile Salt, and a fœtid Oil, *&c.* which has the ſame Smell as Diſtillations of Animal Subſtances have: They may moſt properly be called an Animal Tartar; of which Nature are the Gouty Chalk-Stones in the Fingers of Gouty People.

Of all Menſtruums I have tryed on theſe anomalous Concretions, the following has the greateſt Effects, *viz.* Cut our Phoſphorus into very ſmall bits, ſpread them on the funnel uſed to let alcalious Salts run *per deliquium*, place it in a Cellar for ſome time, when the Phoſphorus will turn to a Liquor or *Liquamen*; put this *Li-*

quamen

quamen into a Spoon, which hold over a Lamp of Spirit of Wine, when in time the humidity will be exhaled, and the Phlogiſton or ſulphureous part will take flame, and be conſumed, and there will remain an acid Liquor very pungent or ſour, which being diluted by ſeveral times it's quantity of Barley-water, is the Diſſolvent: This, I ſay, will diſſolve more Stones, than all other mild Menſtruums; yet I cannot adviſe going to work on the Injections; and indeed Mr. *Hales* told me he would not adviſe it neither.

Touching the Stone in the Bladder, it is my firm belief that the *Materia Calculi*, or the Matter or Root of the Stone is in all Mankind, altho' it does not actually come to be a Stone in every Perſon. It would be a glorious work if any Phyſician, Chymicus, or others ſhou'd be ſo happy as to hit on means to deſtroy the Radix, or to hinder that propenſity in the human

human Latex's to run into such Concretions, which, I know, one of the first *Medicus Chymicus's* in the World is now attempting. While I attended the Colleges at the University of *Paris*, and Chirurgical Lectures, one of the first Surgeons of that City in his Discourses related the following, *viz.*

That a young Woman playing Tricks with a Bodkin in a certain Part, let the same fall into her Bladder, when not lying there long, and being afterwards extracted, was found cover'd with a Calculous Matter. If any one makes Water for some time into any Vessel, and only empties out the Water without washing the said Vessel, he will soon see it lin'd or coated with a true *Calculus*.

For the Use of Surgeons.

I Ask pardon, GENTLEMEN, for meddling in your Profession, which

which I do not pretend to understand; I only desire your Leave to insert here a Hint or two about some Things I have found to be Fact, which if they be of use to Mankind, I have what I propose.

I.

An Unguent, that I and others have found to be of Service in Ulcers, *viz.*

Rec. Ceræ Flav. Unciam unam.
Ol. Hyperic. Unciam dimid.
Minii, Unciam dimid.
Phlegm. Vitriol. Drachm. unam.
Nitri, Drachm. unam.
Sal. Saturn, Drachm. duas & sem.
Sulphur. Antim. Drachm. duas & sem.
Vitriol. ad albedin. calc. Drach. duas & sem.
Terebinth. Drachm. unam.
Camphor, Gr. decem.
Fiat Unguent. S. A.

Which I commit to your better Management for its Use: If it is not soft enough, add a little more of the *Ol. Hyper.*

II.

II.

It is ſometimes found difficult to ſtop the Progreſs of Mercurial Medicines in a Salivation; the following has been found to ſucceed better than other Things, *viz.* To give two or three Grains of *Aurum Fulminans* made into a Bolus with any Conſerve once a Day, and to purge a little with the true *Sal Glaub.* for *Mercury* runs greedily into, or joins with Gold, which is evident from many Chymical Experiments. This *Aurum Fulminans* given in any higher Degree, will beget great *Tormina* in the Ventricle, and Inteſtines; but eſpecially in the former: I mention true *Sal Glaub.* for almoſt all the Salt vended under that Title at preſent is a falſe Preparation; and indeed it is a ſhocking thing to conſider the dangerous Practices of the *Falſarii* of the Preſent Time, among whom it

is

is the ſole Study to adulterate and ſophiſticate in the Preparation of Medicines, both Chymical and Galenical; about which I have talked with ſeveral of the learned Members of the College of Phyſicians, and concerning which I may ſay more in due time; as well as on other Mal-Practices exerciſed in Eatables and Drinkables.

III.

Touching a true Diſſolvent for the Cerumen Auris.

I have found by Experience that warm Water does readily and entirely diſſolve it; for it is a kind of Animal Soap: Water therefore is more proper for this uſe in the Ear than Oil.

Highly rectified Spirit of Wine has generally been directed to preſerve *Cadavera*; but I have found that if uſed ſo ſtrong, it ſhrivels, contracts and ſpoils them; and that a Mixture

of three Parts of Spirit of Wine, and one of Water does beſt for the Purpoſe.

IV. *To cure Burns without ſuffering Pain.*

The curing Burns without Pain, to ſome, I doubt not, will ſound ſtrange; which however, if the Burn don't happen on the Trunk of the Body, or Head, will be found to be fact, *viz.* as follows: As ſoon as a Burn happens to any of the Limbs, ſuppoſe a Hand, or Foot, let the Part immediately be put into a Veſſel of Water; and if it happens in the Winter, let a little warm Water be added to the cold, to take off the great Coldneſs, and to bring it as near as can be to the State of Water in the Summer, whereon the Sun don't ſhine; for if the Water be too cold, the Perſon will be uneaſy: Again, Care muſt be taken, if the Thing happens in the Summer,

mer, and, indeed, the Winter too, that the Water does not grow warm by continuing the Limb in it; for if it does, the Patient will be made uneasy from that reason, which must be remedied by prudently adding now and then a little cold Water. In this Posture very little or none of the usual tormenting Pain will be felt, which shews that the Air is the Cause of the Pain. In this manner the Part must be held four or five Hours, taking it out now and then, to feel whether the Pain be gone, which if not, it must be put in again; but if it is, proceed to treat it with the following Unguent.

Recipe Ol. Olivar. Unc. Quat.
Ceruss. Unc. unam,
Axung. Porcin. Unc. unam.
Sperm. Ceti, Unc. dimid.
Ceræ Flav. Drachm. duas.
Vitel. Ovor. duor.

Powder the Ceruss, and boil it in the Oil till dissolved and is transparent,

parent, then ſtop, for it muſt not be thicker than a Syrup, or Turpentine; then add the *Axung. Sperm. Ceti*, and Wax, ſtir it well till cold, then beat it in a Glaſs-Mortar, with the *Vitell. Ovor.* or inſtead of the *Ol. Olivar.* may be uſed *Ol. Hyper.*

BEING ſollicited very much by many of the Gentlemen of the Ingenious Profeſſion of Painting to find them a florid laſting Green Colour, in which reſpect the World was always deficient, I worked hard on that diſcovery jointly with a Virtuoſo, which at laſt was accompliſh'd; as were likewiſe ſome other Colours accounted by Artiſts to be uſeful. And while I was on theſe Searches, the Houſe-Painters believing I knew the Nature of Colours, applied themſelves to me for help in the deplorable Caſes many are under from the Uſe of their Colours. This excited

cited me to a thorough Search into all the Ingredients or Preparations uſed in their Buſineſs, whereby to come at the Knowledge of their Enemies, which I find to be ſeven, of which two Mercurial, one Arſenical, and two of Lead among the Portrait-Painters, which they uſing in ſmall Quantities and little Dawbing, no Miſchief ariſes to them; and in the Hands of the Houſe-Painters four, *viz.* two of different kinds of Lead, Red and White; one Mercurial, which is the factitious Cinnabar, and one of Verdigreaſe: From the Red Lead and Cinnabar they receive hurt; but the Source and chief Spring of their Deſtruction comes from the White Lead, and the Verdigreaſe, which containing either a Mercurial or Arſenical Principle, cauſe Gripings, ſtop the Excretion both of the Fæces and Urine, bring on Spaſms, Tremblings, Difficulty of Breathing, Suffocations,

exceſſive

exceſſive Vomitings, Irritations to Stool, and Ulcers in the Inteſtines, *&c.* with Lameneſs, which terrible Effects fall on the Colour-Men, alſo Verdigreaſe-Makers, Makers of White Lead, thoſe who Tin over Metals, Plumbers and Painters, among whom I have met with ſad Objects; but none ſo bad as the Plumbers and Makers of White Lead. The bad Effects of the Verdigreaſe and White Lead are ſuch, that one of the beſt Artiſts in Colours I have met with, told me, that a Cat cannot live long in his Houſe, but all die by thoſe Ingredients: And I ſaw an Experiment made in the *Rue St. Honore* at *Paris* by a Virtuoſo, who placed a Pigeon in a Cage, which ſtood on the Window of a Colour-ſhop as far as it could out to the Street, when notwithſtanding all proper Care was taken to feed him, *&c.* he ſoon droop'd and died. Verdigreaſe, or the Green Colour is very much uſed in *Holland*;

land; for in and about *Rotterdam* a Man ſcarce ſeeth any other, and where the People who work therein are very wretched; which alſo is much uſed in the *Weſt-Indies* on the Veſſels, *&c.* that go to Sea. The Caſe of poor Workmen occupy'd in theſe Things is very hard, and no great deal is to be done for them; however, I have ſeen ſome good Effects from the following Preventatives, and Methods of Cure, *viz.* Let the Plumbers, and thoſe who tin Metals over, procure a large Spunge, which let them fill with Water, or one Part Vinegar and three Parts Water, ſqueezing it afterwards gently out; and by means of two Strings conveniently ty'd thereto, let the ſame be fix'd over the Mouth and Noſtrils, which will greatly hinder the noxious Fumes from entering; and which Practice I have found of great uſe in a chymical Elaboratory when we have to do

with acid Spirits, or mix Sublimate with the Mercury for Calomel, &c. Let alſo the ſame Method be uſed by the White-Lead Makers, Makers of Verdigreaſe, Colour-Men, and Painters; and let all theſe Artificers procure Gloves to be made of Bladders, which let them dip in a Mixture of Vinegar and Water as beforeſaid, and wear the ſame while at Work, which will keep off the Evil much longer.

As to Methods of Cure, Profeſſor *Hoffman*, Firſt Phyſician to the King of *Pruſſia*, and one of the firſt Chymicus's in the World, adviſes, if Cholics enſue from the White Lead and Verdigreaſe, to uſe Glyſters of Oil, Butter, or fat Broths, and to give Oils internally, or melted freſh Butter; then to drink warm Water till the Patient vomits. If Palſies come on, to bathe in Baths or warm Water, and to continue a Milk Dyet: And great Care ought

to

to be had, that the Oils given be freſh; for I have obſerv'd that expreſs'd Oils are noxious and unfit for Uſe in fourteen Days; nay, an Emulſion of Sweet Almonds made in Water I have found to grow acrid in one Day.

A renown'd Profeſſor ſays, he knew a Woman cured of a violent Aſthma contracted from White Lead, by drinking Vinegar.

But I have thought of a better and more ſure Cure than all this, which is to ſend the White Lead and Verdigreaſe to the Bottom of the Sea, or never to uſe them; in lieu of which, I am certain from Experiments, that a good innocent green Colour is to be made; and I would for the Good of the poor Sufferers, beſtow Pains to produce them a white Preparation inſtead of the poiſonous White Lead.

Ramazzini has ſpoke admirably *de Morbis Artificum*, and better than

all others I know of; but I have not met with any in the Profeſſion of Phyſic or Chymiſtry, who have fully examined the Nature of Colours as to Health.

MANY

MANY USEFUL DISCOVERIES or ARTS,

Of Real

Benefit to the Publick,

That occurr'd to the AUTHOR during many Years Researches in Chymistry.

PART III.

I.

To preserve Sperma Ceti white, for the Use of Druggists and others.

TAKE highly rectified Spirit of Wine, that is, of Malt; put thereinto the *Sperma Ceti*, let it remain in about half an Hour, shaking it often

often about, pour the Spirit off from it, and lay the *Sperma Ceti* upon Paper to dry in the Shade: This ſame Spirit of Wine will do for two or three Parcels of *Sperm*; and then, if it be diſtill'd up *in Balneo Mariæ*, it will ſerve for the ſame Uſe again, and ſo on for a conſiderable Time; and if it is at laſt diſtill'd up in the *Balneo* as aforeſaid, it will ſerve for moſt Extractions, ſuch as Colocinth, Jalap, Scamony, Agaric, Ellebore, *&c.* or to burn in a Lamp.

II.

To hinder the Offence in Back-houſes.

Let a Peck of unſlack'd Lime be thrown down, which will have the deſired Effect.

III. *Laſting Writing.*

Write upon white Paper with a good black-lead Pencil, then take the White of an Egg, beat it out with a whisk,

whisk, as is done for clarifying Syrups, with which cover the Writing thinly over, then place it in a Tin or other Veſſel ſwimming upon hot Water, by which the Egg will be dried: This Writing cannot be diſcharged by any acid Spirits, without deſtroying the Paper, neither will any time obliterate it; whereas all kinds of Ink will be loſt by Time; even by carrying Writings to Sea, they will be in a great meaſure loſt; ſo will Lancets, *&c.* become ruſty; which proceeds from the ſaline Points carried about in the Air: for we ſee, that Sea-water thrown upon Writing will totally diſcharge it. Inks are readily diſcharg'd by all acid Spirits, and particularly by Spirit of Salt: It is with this, without its flowers, that Knaves have diſcharged Writings, and not *Aqua fortis*; for that leaves a Yellowneſs that is ſeen; when they have taken out the Writing, they make the Paper bear Ink again for their ill purpoſes,

poſes, by applying to the part a Mucilage of ſhreads of Leather boiled ſtrongly in Water. Having been asked by Ladies ſometimes, what wou'd diſcharge Wine out of Linnen, I inform'd them that Stains of Red Port are diſcharg'd by Spirit of *Sal Armoniac*; and Wax, dropt on any Garment, is taken away thus, *viz.* Wet a Rag with Water, put into it Embers of Wood, cover it by folding the Rag over it, touch it to the Wax, and it forthwith goes off.

IV.

A durable Writing another way.

Let an Ink be made with the *Gum Arabic* diſſolved in Water and finely ground burnt Ivory, and write therewith, which acid Spirits cannot diſcharge; and to ſecure it againſt attempts by hot Water, *&c.* the Writing may be cover'd with the beaten White of Egg, as aforeſaid.

V.

V.

To render Cordial Waters ſoft and mild.

When the Cordials are made, put them into flat Pans, the ſame Women bake Puddings in; ſet them in a pretty large Room, where there is no Fire, where let them ſtand 48 hours, when they will let fall a little ſediment, which is a ſmall Precipitation made by the Humidity in the Air, from which you may pour the Cordial Waters off, or crane them, and philtre the laſt three or four Ounces: this Proceſs carries off the moſt fiery active Parts, which is perceiv'd when Cordial Waters are drunk.

VI. *To render Wood more durable.*

Take of the Sand that is uſed in ſawing large Stones, (the fineſt Part of it) to which add the thickeſt drying Oil, ſpread that upon the Wood, which when dry, will be like a Stone, and

and preſerve the Wood a long while; which may be very uſeful in Fortifications.

VII.

An Oil for Clocks, Watches, and other Machines.

It is generally complained by Watch-makers, that in Cold Weather the Oil congeals in the Works, and obſtructs the Motions; to remedy which, proceed thus: Look into a Jar of Sallad Oil in Winter, when it is frozen or congeal'd, and there will be found in the middle of it about a Pint and a half, or a Quart of Oil that is fluid or uncongealed, and which no Cold in this Climate is capable of freezing, which may ſerve for the purpoſe for Watch-makers. Again, it is complained by theſe Artificers, that their Oil generally grows thick or viſcid about their Works, and ſo impedes their Motion; to remedy which, let an Oil be

preſſed

preſſed out of *Behn Nuts*, which is of a prodigious laſting Nature, and doth not alter, corrupt or ſpoil in many Years; I kept and obſerv'd it 14 Years; whereas on the contrary, expreſſed Oils, ſuch as *Almonds*, and the like, become noxious in 14 Days. When Sallad-Oil is deſigned to be uſed, as in the Experiment about the Jar, the Artificers ought to deſire Merchants to get their Correſpondents to ſend the Oil over hither unmixed with Salt; for they uſually mix Salt with it to make it keep, which Salt by its acrimonious Parts corrodes their Machines, and does them Injury that way.

VIII.

To clean Fire-Arms in Arſenals, &c. without Filing.

Take Scales of Iron one pound, Blood-ſtone four Ounces and one Drachm, Emery eight Ounces, two Drachms, fine Flower four Ounces one

Drachm; reduce all to a fine powder, then make a Jelly of Iſinglaſs in Water, with which beat the Ingredients up to a Paſte in an Iron Mortar, and therewith make a kind of Cakes, by putting them into Moulds of Tin or Wood, half an Inch deep, two Inches wide, and three Inches long, and let them dry in the Shade. With this you clean Fire-Arms or any Iron Utenſils; which may be poliſhed with the following, *viz.* Take Oil half a Pound, into which thruſt a red-hot Iron, which in ſome meaſure breaks its Texture, and renders it not ſo greaſy as before; to this put half a Pound of black Lead, and half a Pound of white. If the Arms are deſign'd to be laid up in an Arſenal, they may be preſerv'd in this manner, *viz.* Take Flowers of Zink four Ounces, Linſeed Oil one Pound, which boil together till the Flowers are diſſolved, which muſt be ſpread upon the Arms, and let

dry.

dry. The Flowers of Zink are made in this Manner, *viz.* The Zink muſt be put into a Crucible, and ſurrounded by a pretty ſtrong Charcoal Fire, when a mealy Subſtance will ariſe to the uppermoſt part, which muſt be taken off with a Spoon: This was communicated to me by a Maſter of the Mines in *Germany*.

IX. *Experiments and Thoughts on Ways to render Sea-water drinkable, for the Uſe of Ships.*

This Matter has employ'd many abler Chymicus's than myſelf; particularly the late renown'd Profeſſor *Stahl*, firſt Phyſician to the preſent King of *Pruſſia*, with whom I exchanged many Letters on this Subject: It was that learned Man's Opinion, that it is poſſible to render Sea-water drinkable in a Chymical Elaboratory; but not in a Ship, which is almoſt in perpetual Motion: He alſo gave it as his Opinion

that Sea-water would not be wholesome for Men to drink for a Continuance, let it be got rid of its Salt by whatever means we could; however it might serve on an Emergency, which is what we intend, and no more.

The Quantity of Salt in Sea-water is about one Pound in thirty Pounds near our Shore; and near the *Dutch* about one in forty; which is not enough to hinder it from putrefying: for I once kept Sea-water in a Stone Jug three Years, when being open'd in a Room of about 2000 Cubical Feet, there was such a prodigious ſtench, that I and others were obliged to fly the Place. I have made Sea-water to paſs thro' great numbers of Abſorbent Bodies or Ingredients in properly contriv'd Glaſſes, to ſee if luckily the Salt by its acid Part would lay hold thereon, and ſtay behind, in which Attempts it ſucceeds at firſt with

ſome;

ſome; but ſoon after the Water runs through Salt as it goes on.

In other Experiments I have added all the *Species* of Acids, as Vegetable, Mineral, and what I will call metallic Acids, ſuch as Butter of Antimony, and Oil of Vitriol, the firſt of which contains the Regulus of Antimony, and the laſt Iron in a fluid ſtate; for the Mars of the green Vitriol comes over in Diſtillation in the ſtate of a Gas; theſe, I ſay, I added to increaſe the Acrimony of the Salt-water, that it might take hold on the different abſorbent Bodies I made it run thro', but in vain. I alſo try'd divers Ways of Precipitation, which indeed would fling down the Salt, but added ſomewhat as noxious to it, which made the Remedy as bad as the Diſeaſe.

If Sea-water be put into a Stone ſtraining Ciſtern uſed in ſome Taverns, the firſt Pint that runs thro' will be like pure Water, having no

Taſte

Taſte of Salt; but the next Pint that follows will be as ſalt as uſual.

The Remedy then which we propoſe is no Secret to Virtuoſo's; yet ſeems not much known to Sea-faring Gentlemen, which is by diſtilling the Salt-Water, when the Salt muſt remain behind; and to the diſtill'd Water we may add a few Grains of Salt, according to the Quantity, or a little Sugar, wherby to give it a Taſte; for without doing ſo, it has but a very indifferent one, or rather none. The ſame Copper that boils their Peaſe in, &c. might do, adding thereto a Still-head and Worm-tub, which might be ſlung in the Ship, becauſe of it's motion; and for which purpoſe a little addition of Fuel might be carried: for when I have talked of this Practice to ſome Captains, they all anſwered me, we may as well ſtow Casks of Water, as Fuel; but we do not talk of any thing but as on an Emergency, for which this

me-

method would certainly ſerve. I had fully purpoſed to carry my Enquiries further about rendering Sea-Water drinkable, but on learning that great Phyſician and Chymiſt's opinion, Profeſſor *Stahl*, that he could not adviſe its uſe for any time, I forbore my Searches, contenting myſelf to adviſe Diſtillation on a neceſſity, and communicating what I had done to ſave others the trouble of doing the ſame.

X.

The Preſervation of Waters for drinking in Ships.

If Waters are corrupted or putrefied, it muſt proceed from an admixture of animal, or vegetable Bodies, to avoid which muſt be our Buſineſs; wherefore if River-water be deſigned to be carried to Sea, it ſhould be choſe, if poſſible, the furtheſt from a Town, *&c.* that may be, that it may be the pureſt from theſe

Sub-

Subſtances; and which ſhould be kept in Stone Jugs, or Veſſels of a large Size made of that ſame Earth, which are a kind of Vitrification or a Degree towards Glaſs; for if the Water be put into Wood-Veſſels, they continually furniſh to it matter for Putrefaction. But if this method be thought too troubleſome in Ships, the Tubs muſt be uſed, and to every forty Gallons of Water let there be put an Ounce of true Spirit of Vitriol; I ſay true, becauſe the Spirit of Vitriol uſually to be met with, is only Oil of Vitriol mix'd with Water, which Oil I would not adviſe to be uſed, becauſe it is a more Metallic Acid than the Spirit, which is the more phlegmatic or lighter part that comes up in Diſtillation: If the Oil is ever uſed, a Third of the Weight of the Spirit does, that is, one Ounce does for three; which Thing to thoſe unacquainted with Phyſic will ſound ſtrange, but to Phyſi-

Phyſicians not. This Spirit, or Oil will greatly reſiſt Putrefaction, and will preſerve the Water much longer than uſual, and will be very proper for the Seamen in hot Countries, by hindering a too great Perſpiration; and in which Thought I had the Concurrence of one of the firſt Phyſicians and Chymiſts in the World. It is to be ſuppoſed there are not many conſumptive Men in a Ship, otherwiſe it would be proper to acquaint them that Mineral Acids, or indeed others, are not good for them.

If Spring-Water be had from Gravelly Grounds, and carried to Sea, it will keep a long while without the aforeſaid Acids; but if a little of them be added, it will not putrefy in haſte. Holes ought to be bored in the Corks that ſtop the Veſſels, to ſuffer a free Ingreſs of Air from the Atmoſphere, otherwiſe the very included Air itſelf will pu-

trefy and ſtink. If Water is already putrefy'd, Diſtilling cures it. Before I quit this Buſineſs, I would ſay ſomewhat concerning a Phænomenon that has puzzled ſome, *viz.* That of the Water's taking Flame ſometimes on opening a Cask near a Candle; which muſt proceed from this, that thoſe Casks had in them Beer before the Water was put in, and which not being waſh'd, there remain'd the Grounds or Sediment of it, which fermenting, produced the vinous Spirit that took Flame as before ſaid; for Water conſider'd as Water cou'd never do it.

X.

For the Preſervation of Meat ſome Time without Salt.

It's done by wetting a Napkin well in Vinegar, and wringing it out, in which the Meat muſt be wrapt; by which means it will be kept a Fortnight or longer in hot Weather.

XI.

XI.

Liquors grown ſour, as Wines, Beers, Ales, Cyder, *&c.* will be render'd drinkable, or have that Sourneſs taken off by putting into the Liquors Oyſter-Shells found on the Sea-ſhore, and grown white, and which are to had at the Druggiſt's; which muſt be only broke into Pieces as broad as a Shilling or Six-pence, and not powder'd, which if they are, the leaſt Motion of the Liquors raiſes the Particles, and ſo they make them look troubled. Chalk, or other Abſorbents call'd teſtaceous, will take off this Sourneſs too, but they leave a diſagreeable Taſte behind.

XII.

Touching true and laſting Japan.

The following Proceſs was communicated to me by the Phyſician of his preſent Majeſty King *Staniſlaus*,

niſlaus, which I have not try'd, *viz.* Take Umber, Litharge of Silver, Red Lead, of each four Ounces, powder them and pour thereon three Pounds of Linſeed Oil, and let it boil, without ſtirring the Ingredients with any Thing; when it is boil'd and grown cold, pour the Oil off from the Powders into another Veſſel: Take of this one Pound and a half, Oil of Turpentine two Pounds, or three Pounds, White Amber finely powder'd one Pound, Boil'd Turpentine one Ounce, mix according to Art for Uſe: This the ſaid Gentleman averr'd would withſtand hot Water, or other Tryals.

XIII.

Inſects in Books that deſtroy the Paper.

I have endeavour'd by many Experiments to keep theſe Animals out of the Books by Scents diſagreeable to them, of which Camphire is known

known to be one of the beſt; however, I found it neceſſary to go further; the following Machine deſtroys all Animal Life whatſoever; neither can any Sperm or Eggs come to Maturity after having been put therein, *viz.* Let a Brick-work be raiſed in the Nature of a Furnace, fix therein a Copper-Kettle or Veſſel, which fill two Parts in three with Water; have alſo another Copper Veſſel with a flat Bottom, ſo as to ſtand with its Bottom immerſed two or three Inches in the Water; let there alſo be made another large Copper-Veſſel, like the Head of a Still, but without a Neck, which join to the laſt mention'd Veſſel, wherein the Books muſt lie upon ſeveral Foldings of Paper, to hinder them from touching the Metal; when the two Veſſels being luted, give a Fire underneath in the Furnace, which will heat the Water, and the Water will heat the ſecond

cond Veſſel, and the Veſſel will heat or rarify the Air, ſo as to deſtroy all Life. If a ſtrong Fume of Sulphur were made in a Library, it would alſo deſtroy theſe Animals; for if the Fume be ſtrong enough, no Animal Life in the World can ſuffer it.

XIV.

Diſtillers often receive great Miſchiefs by Fire from the blowing off the Still-head, to remedy which do as follows, *viz.* Let a Kind of Trough or Receptacle be made of Tin or Copper, which may be fix'd about the Head of the Alembic, and ſo as not to hinder the joining of the Head to the Still, which Trough muſt have a Pipe pointing off from the back Part of the Furnace, diſtant from the Fire-place, to which muſt be join'd a Receiver; ſo that if the Spirits boil over the Mouth of the Alembic, they will run into the Trough, and ſo down by

by the Pipe, and not come near the Fire; whereas without the Uſe of this Machine they always run down the ſurface of the Brick-work to the Fire-place, and there take Flame, which is propagated upwards to the main Quantity of Spirits in the Still, and the whole takes Fire.

XV.

To guard againſt Monſ. Dupre's *ill Practice of opening all Letters, Envelopes, or all ſeal'd Things whatſoever.*

This Man could imitate all Seals and Coats of Arms in an exquiſite Manner. He opened Seals by a contracted Steam of hot Water; and the Impreſſions he took off by an Amalgama of Mercury and Silver; or by ſtriking upon the Seal with a Hammer, upon which a Bullet is firſt laid, and by other Methods. I muſt own it's a difficult Work to contrive

contrive a Cement or Plaſtic Compound that will withſtand the Steams of hot Water; for it looſeneth all the things a Man can think of: but as I was deſired by a noble Perſon to provide againſt *Dupre*'s mal-practice, I worked hard for a long while, trying all the ſticking things I cou'd think of, but in vain. However, ſtill proſecuting the Search, I at laſt hit upon the point, which is this, *viz.* Let dry Garden-Beans be put into a Braſs-Mortar, and ſome ſtrokes be given them with a Peſtle, when the Shells will fly off, which ſeparate from the Beans, and which reduce to a fine Powder, and paſs them through a Lawn Sieve, then return the powder into the Mortar, rubbing it till it becomes an extream fine flour; then let the White of an Egg be beat out with a whisk, as is done for clarifying Syrups, a little of which muſt be mixt with ſome of the flour, to make it a moiſt Paſte, which ſpread upon the Sealing-place

of

of the Letter as big as a Shilling, or the uſual bigneſs of a Seal; then cloſe the two Papers, as is uſual in Sealing, and hold the part cloſe to a Coffee or Tea-pot, or any other Veſſel having in it hot water, which will harden the Cement, ſo that it will never be opened by any means whatſoever, without tearing. The way to guard againſt taking off Impreſſions, Coats of Arms, &c. is by ſmoaking the Seal by a Candle, &c. which being known to many, I would not inſert it here: When the Letter is made faſt by the Cement, Wax and any Seal may Cover the ſame place.

XVI.

Experiments to deſtroy Bugs in Houſes.

This matter has employed ſome ingenious Men, for I met with a Learned Profeſſor of Phyſick and Chymiſtry who had been Labouring in vain on the Work ſeven Years, and

who told me he alſo found *Millepedæ* very hard to ſuffocate, which was his Methods, or Attempts to deſtroy them by: This Gentleman alſo acquainted me that if Sugar be placed thirty Feet from the Place where the Bugs are, they will run to it; where alſo if a Neſt of Ants be laid, the Ants will deſtroy all the Bugs; ſo that if thoſe Creatures were not troubleſome Companions themſelves, they would be a Cure againſt the Bugs. As to all the pretended Remedies or Cures againſt theſe Vermin offered the Publick daily, I perſwade myſelf they are nothing but Frauds: I let one of thoſe Propoſers do a Bed of mine, when ſecuring a little of his Liquor, and examining it, I found it to be Yellow Arſenick, and Oil of Turpentine, which if he cou'd perſwade the Bug to eat, wou'd do; but I know he will march over that ſafely enough. The next famous Remedy that People ſpent

their

their Money in, was Oil of Turpentine, Camphire, and Spirit of Wine, equally to be laugh'd at.

This troubleſome Creature, we know, bites ſome People, and others he leaves untouched; but we have no Philoſophy to explain to us why he doth ſo; however we ſee from thence, that he has his likes and diſlikes as well as we. I endeavoured by a vaſt number of Tryals to find what might be ſo diſagreeable to him, as to cauſe him to keep from the Bed, which I did, by powdering moſt of the Things found in the Druggiſt's-Shop that have any Smell, making a Ring with the Powder, and putting the Bug therein; when I found that one of the Things he diſlikes moſt is *Ruſſia-Caſtor*; however, tho' this be laid about the Bed, he will not quit the Place.

I then tryed Rolls of Tobacco, the freſheſt to be had; Pellitory of the Wall, Rue, Wormwood, ſeve-

ral Chymical Oils; which Mr. *Bradley*, Profeſſor of Botany at *Cambridge*, ſpeaks of, but all in vain.

I then tryed to deſtroy him by Fumes, which I made firſt of Flowers of Sulphur, Filings of Steel, and Oil of Vitriol, ſetting them on a portable Iron Furnace with lighted Charcoal under it. Likewiſe Fumes of Acid Spirits; Fumes of Mercury; Fumes of all the Species of Arſenick, all which he ſtood boldly; when all other Creatures I tryed were killed by ſome of thoſe Fumes, except the Ant, which is likewiſe a ſturdy Creature.

At laſt I tryed the following, which no Animal Life can ſubſiſt under, *viz.* Let Matches of Sticks be made by dipping them in Common Sulphur, ſo that they may have adhering to them four Pounds of it, which will do for ſome Rooms; but if the Room be of the bigneſs of 2000 Cubical Feet, it requires about

about ſix Pounds, which Matches muſt be ſet upright in Earth put into a large Earthen Pot, ſuch as Trees are planted in; and ſet on fire in the Room where the Bugs are troubleſome, ſtopping the Chimney, by hanging the Blankets before it, and likewiſe cauſing Blankets to be hung againſt the Cracks of the Door, in which a little Hole muſt be made, and cover'd afterwards with Glaſs, that may ſerve for a Peep-Hole to ſee no Miſchief enſues.

This Sulphur while burning will give a prodigiouſly ſtrong Funck, and ſuch as will kill all Creatures in the Univerſe. The Work might be begun in the Morning, and by next Day the Fume will be ſubſided, and the Door may be opened. It would be proper to make the Fume when hot Weather comes on, and they begin to bite; and again in *September*. All Gold and Silver Laces, Pictures, or Cloaths of fine Colours muſt be taken

taken out of the Room, which with other Circumſtances, renders it a troubleſome Work; however, I am perſuaded by many Years Obſervations that there is no other way to help us but this Method, and the two following, *viz.* Let all Things that may be wet without damage to them, be put into the great Worm-Tub of a Diſtiller, or Chymiſt, when he has diſtilled ſo long that the Water in the ſaid Tub is hot, by which the Bugs are killed, and their Eggs rendered abortive; for no Animal Life can ſubſiſt in hot Water; and the Things that are improper to wet may be put into ſuch a Machine as is deſcribed herein for deſtroying Inſects in Books, where alſo the Wood-work, or thoſe Parts we have juſt mentioned to be put into the Still-Tub, may be put likewiſe: for which purpoſe the Machine muſt be made big enough, wherin the Air becomes ſo hot as

to

to deſtroy Life, and yet would not damage Laces of Gold and Silver, &c.

XVII.

The Proceſs by which Longueville *imitated Gold, for which the* Dutch *boiled him alive in Oil, was this :*

Take Copper four Ounces, calcine it with common Sulphur till it comes to an Ounce and Quarter, which muſt be done by ſeveral red-hot makings, and when it becomes green, it is enough. Then take this calcined Copper, and an Ounce of Silver, and half an Ounce of Borax, melt them very well together, then caſt it out of the Crucible, and beat off the Droſs, and melt it again with as much Borax ; caſt it out again, and beat off the Droſs as before, repeating this Work a third Time, then melt again by itſelf in a ſtrong Fire, adding thereto two Ounces

Ounces of Gold; let it ſtand a while in Flux, add ſome Borax to it, and keep it there an Hour, then caſt it out into Ingots, repeating the Fluxing till the Borax remains white; then melt this Artificial Gold alone, and caſt it into Grains of Nitre, till it has got a good large Skin on the top of it, then caſt it into Ingots, and it is done.

So far the Receipt as communicated to me by a *German* Profeſſor of an Univerſity.

What Faults this Man committed in his Time I know not, but I regret his Death if it was for Gold-making, for I think this Proceſs far from that; however, be it as it will, a Friend of mine knows a Gentleman who ſaw *Longueville* caſt down an hollow Wooden Thing into a Cauldron of boiling Oil, when he ſtood ſo nigh it, that ſome of the Oil flew on his Clothes.

FINIS.